

ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

1926.

BOMBAY:
INTED AT THE TIMES PRESS,
1926

[PRICE Rs 2]

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APPENDICES.

ANNUAL REPORT OF THE INDIAN CENTRAL COTTON COMMITTEE, BOMBAY, FOR THE YEAR 1926.

The Central Cotton Committee was constituted by Resolution No 404 22, dated the 31st of March 1921, of the Government of India in the Department of Revenue and Agriculture and was originally an Advisory Committee With the passing of the Cotton Cess Act the Committee was permanently incorporated and provided with funds of its own for the promotion of research for the improvement of cotton growing The Committee's activities, therefore, fall into two main groups In the first place it continues to advise the Government of India and Local Governments on matters connected with the improvement of cotton growing and cotton marketing—particularly on measures designed to prevent abuses and malpractices In this capacity the Committee not only deals with such references as are made to it by Government, but continues to take the initiative in bringing to the notice of Government matters which require attention

2 Apart from its more formal activities the value of the Committee as a common meeting ground for all sections of the cotton industry is steadily becoming more apparent In the administration of the cotton cess funds the Committee provides for research for the benefit of cotton growing in India as a whole, and this aspect of its work is steadily becoming more important.

PERSONNEL

3 Under Rule 3 of the Indian Cotton Cess Rules, members of the Committee hold office for three years and one third of the

members retire each year in rotation. The membership for 1926 was as follows :—

1. President.—Dr. D. Clouston, C.I.E., Agricultural Adviser, to the Government of India, *ex-officio*.

2. Representatives of Agricultural Departments.

Madras	Mr. R. D. Anstead, C.I.E., Director of Agriculture.
Bombay	Dr. H. H. Mann, Director of Agriculture.
United Provinces ..	Mr. G. Clarke, C.I.E., Director of Agriculture.
	(Dr. A. E. Parr, from 16th June 1926 to 4th January 1927.)
Punjab	Mr. D. Milne, C.I.E., Director of Agriculture.
Central Provinces ..	Mr. F. J. Plymen, Director of Agriculture.
	(Mr. R. G. Allan, from 16th June 1926 to 21st December 1926.)
Burma	Mr. H. F. Robertson, Deputy Director of Agriculture.

3. The Director-General of Commercial Intelligence and Statistics, *ex-officio*.

4. Representatives of Chambers of Commerce and Associations.

The East India Cotton Association	Mr. W. Ellis Jones, M.L.C.

The Bombay Millowners' Association	Mr. J. A. Kay,* M.L.C. (*Vice-President*). (Succeeded by Mr. S. D. Saklatvala from March).
The Bombay Chamber of Commerce ..	Mr. V. A. Grantham, M.L.C. (Succeeded by Mr. J. A. Kay from March).
The Indian Merchants' Chamber, Bombay..	Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A. (Mr. Lalji Naranji, M.L.C., from December 3rd, 1925, to September 26th, 1926).
Karachi Chamber of Commerce	Mr. G. C. R. Coleridge.
Ahmedabad Millowners' Association	Seth Kasturbhai Lalbhai, M.L.A.
Tuticorin Chamber of Commerce	Mr. G. Z. Meli. (Mr. H. T. Cartwright from May 17th to December 10th, 1926).
Upper India Chamber of Commerce ..	Mr. Bertram West.
The Empire Cotton Growing Corporation.	Mr. W. Roberts.

5 & 6. COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces ..	Mr. S. B. Mehta, C.I.E. Rai Bahadur K. S. Nayudu, M.L.C.
Madras	Mr. H. F. P. Hearson.

* Now Sir Joseph A. Kay, Kt.

Punjab	Rai Bahadur Seth Prabhu Dayal, M.B.E.
Bengal	Mr. B. K. Lahiri.

7. Co-operative Representative—Mr. B. F. Madon.

8. Representatives of Cotton Growers.

Madras	M. R. Ry. R. Appaswamy Naidu Garu.
	M. R. Ry. B. P. Sesha Reddi Garu.
Bombay	Rao Bahadur Bhimbhai Ranchodji Naik, M.L.C.(Surat).
	Bakhshi Darshan Singh (Sind).
United Provinces ..	Kunwar Bikram Singh of Pisawah, M.L.C.
	Rai Saheb M.Amba Prasad,M.L.C.
Punjab	Mr.. H. T. Conville.
	Sardar Ujjal Singh, M.A.
Central Provinces and Berar	Rao Saheb V. G. Kulkarni, M.L.C.
	Mr. N. V. Deshmukh.

9, 10 & 11. Representatives of Indian States.

Hyderabad State ..	Mr. Mazhar Hussain, Director of Agriculture.
Baroda State ..	Mr. Manilal B. Nanavati, Director of Commerce and Industries.
Gwalior State ..	Mr. Hiralal H. Pandya, Administrative Officer, Department of Agriculture.
Rajputana and Central India States.	Mr. A. Howard, C.I.E., Director of the Institute of Plant Industry, Indore.

ADDITIONAL MEMBERS NOMINATED BY THE GOVERNOR-GENERAL IN COUNCIL.

1. Dr. W. Youngman, Economic Botanist for Cotton, Central Provinces.
2. Mr. G. H. Krumbiegel, Representative of the Mysore State.
3. Mr. G. R. Hilson, Cotton Specialist, Madras.
4. Mr. K. G. Reshimwale, Representative of the Indore State.
5. Rao Saheb Bhimbhai M. Desai, Deputy Director of Agriculture, Gujerat, Surat.

SECRETARY (appointed by the Government of India) Mr. B. C. Burt, B.Sc., M.B.E., I.A.S.

DEPUTY SECRETARY—Mr. W. J. Jenkins, M.A., B.Sc., I.A.S.

4. There were several changes in the membership of the Committee during the year. Mr. V. A. Grantham, representative of the Bombay Chamber of Commerce on the Committee since its inception in 1921 and the first Vice-President retired in March 1926 on leaving India. He was succeeded by Mr. (now Sir Joseph) Kay whose place as representative of the Bombay Millowners' Association was taken by Mr. S. D. Saklatvala, another past President of the Millowners' Association, who had served on the Committee in 1924.

5. During Dr. Clouston's absence on special duty as Liaison Officer with the Royal Commission on Agriculture, Dr. W. H. Harrison, Officiating Agricultural Adviser, acted as President of the Committee.

6. Mr. (now Sir Joseph) Kay was unanimously re-appointed Vice-President of the Committee for the year 1926-27.

Sub-Committees.

7. The following members were appointed to form the *Standing Finance Sub-Committee* required by the Indian Cotton Cess Rules :—

Mr. J. A. Kay, M.L.C., Vice-President and Chairman, (*ex-officio*).

Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.

Mr. B. F. Madon. (Succeeded by Seth Kasturbhai Lalbhai).

Rao Bahadur Bhimbhai Ranchodji Naik.

Mr. W. Ellis Jones.

Mr. G. C. R. Coleridge.

Dr. H. H. Mann.

Mr. V. A. Grantham, M.L.C. (Succeeded by Mr. S. D. Saklatvala).

The Standing Finance Sub-Committee held thirteen meetings during the year.

8. *The Local Sub-Committee* during the year consisted of the following members :—

Mr. J. A. Kay (*Vice-President*),

Mr. V. A. Grantham, (until March),

Mr. S. D. Saklatvala,

Mr. W. Ellis Jones,

Sir Purshotamdas Thakurdas,

Mr. G. C. R. Coleridge,

Seth Kasturbhai Lalbhai,

Mr. G. Z. Meli,

Rao Bahadur Bhimbhai Ranchodji Naik,

Dr. H. H. Mann, and

Mr. Manilal B. Nanavati.

The object of this Sub Committee, which includes all members of the Central Cotton Committee living in or near Bombay, is to deal with matters of general importance in the interim between meetings of the full Committee, to the meetings all members of the Central Committee who may be visiting Bombay are invited This Sub-Committee has again performed most valuable work not only in dealing with various references from Government which required prompt attention but in the detailed examination of many matters dealt with by the Central Committee to which the Local Sub Committee reports

9 The appointment of a Special Sub Committee to deal with matters arising out of the Cotton Ginning and Pressing Factories Act has relieved the Local Sub Committee of a certain amount of work, nevertheless it has been fully occupied with the details of the various matters of importance which have come before the Committee This Sub Committee held five meetings during the year

Cotton Ginning and Pressing Factories Sub Committee

10 The Committee was appointed on July 6th, 1925, for the purposes of Section 2 (*f*) of the Cotton Ginning and Pressing Factories Act The membership for 1926 was as follows —

(1) The Vice President, Chairman (*ex officio*), Mr J A Kay.

(2) Five members representing the cotton trade who are residents of the Bombay Presidency —

Mr V A Grantham (succeeded by Mr S D Saklatvala)

Sir Purshotamdas Thakurdas,

Mr W. Ellis Jones,

Mr G Z Meh, and

Mr G C R Coleridge

(3) Four up-country members :—

Madras—Mr. H. F. P. Hearson.

United Provinces—Mr. Bertram West.

Punjab—Rai Bahadur Seth Prabhu Dayal.

Central Provinces and Berar .. .. Mr. S. B. Mehta.

(4) The Co-operative Representative—Mr. B. F. Madon.

The Sub-Committee dealt with a number of questions in regard to the working of the Act to which reference is made in a later section of the report ; seven meetings of the Sub-Committee were held during the year.

Special Standing Sub-Committee on the Finance of the Cotton Crop Up-country.

11. The members of this Sub-Committee for the year were :—

Mr. J. A. Kay, Vice-President and Chairman, (*ex-officio*).

Dr. H. H. Mann.

Mr. W. Ellis Jones, and

Mr. B. F. Madon.

The Sub-Committee held three meetings, framed the questionnaire and instructions to investigators for the village investigations and considered the detailed results reported.

Agricultural Research Sub-Committee.

12. This Sub-Committee meets in conjunction with meetings of the full Committee and examines research proposals, the progress reports on research schemes and the reports of research students. The Committee for 1926 consisted of the following members :—

Dr. D. Clouston (*President*),

Mr. J. A. Kay, (*Vice-President*),

Mr. A. Howard (Director of the Institute of Plant Industry, Indore),

Mr. B. F. Madon (Co-operative Representative),

Sir Purshotamdas Thakurdas, Kt., (Cotton Trade Representative),

Mr. H. T. Conville (Cotton Growers' Representative),

Dr. H. H. Mann,
Mr. D. Milne,
Dr. W. Youngman,
Mr. R. D. Anstead,
} Representatives of Agricultural Departments.

Mr. G. R. Hilson,
Mr. Trevor Trought,
} Co-opted members.

and

The Secretary.

Technological Research Sub-Committee.

13. This Sub-Committee meets in connection with meetings of the Central Committee, and also at other times when necessary, to discuss matters arising out of the Committee's arrangements, for technological research and to advise the Central Cotton Committee and the Director of the Laboratory on the management and development of the Committee's Technological Research Laboratory. The Sub-Committee for 1926 consisted of the following members :—

The *Vice-President* (Mr. J. A. Kay).

Mr. S. B. Mehta.

Dr. H. H. Mann.

Mr. D. Milne.

Mr. Bertram West.

Mr. A. Howard.

Seth Kasturbhai Lalbhai.

The *Secretary*, and the *Director*, Technological Research Laboratory.

Selection Sub-Committees.

14. Selection Sub-Committees as required by the Indian Cotton Cess Rules were appointed from time to time to deal with appointments on the staff of the Committee.

The *Research Students' Selection Sub-Committee* met as usual in January.

15. As is only natural for a body of 42 members, much of the detailed work of the Committee was carried out through the medium of the Sub-Committees referred to above. To the gentlemen who served on these sub-committees and, in particular, to those members of the commercial community in Bombay, who again have given so freely of their time to the furtherance of the Committee's work, much of the success which has attended the Committee's labours is due.

MEETINGS.

16. The Central Cotton Committee met twice during the year, *viz.*, on January 11th to 14th and July 5th to 7th and, as will be seen from the summary of the proceedings which follows, a good deal of useful work was done. At the July meeting, owing to the President's absence on special duty connected with the Royal Commission on Agriculture, Dr. W. H. Harrison, Officiating Agricultural Advisor to the Government of India, presided. The Committee has recently been able to secure an addition to their premises which enables all meetings of the Committee and of Sub-Committees once more to be held in its own rooms. The January meeting was held in the Committee room of the Bombay Secretariat again kindly placed at our disposal by the Government of Bombay.

STAFF.

17. With the approval of the Government of India Mr. W. J. Jenkins, I A S. (previously Deputy Director of Agriculture, North Central Division, Bombay Presidency), was appointed Deputy Secretary to the Committee from May 27th, 1926

Mr. Burt went on short leave from July 11th, 1926, Mr W. J Jenkins, I A S , officiating as Secretary

Mr Turner, Director, Technological Research Laboratory, was on leave combined with duty in England for a total period of 6 months from April 26th, 1926, and Mr W G P Wall, M Sc , I E S , whose services were kindly placed at the disposal of the Committee by the United Provinces Government, officiated as Director during Mr. Turner's absence

Mr. Richardson held charge of the office of Spinning Master, Technological Laboratory, throughout the year.

Messrs. Sen, Dutt, Hari Rao and Bathija, Research Assistants, Technological Laboratory, held charge of their respective offices throughout the year save for short periods of leave

Reference to increase in the staff of the Technological Laboratory *will be found in the Director's report (page 45).*

Cotton Research Botanist.—Mr Trevor Trought, Cotton Research Botanist, Punjab, held charge of his post throughout the year.

18 *Provincial and Local Cotton Committees*.—Provincial Cotton Committees continued to do useful work and meetings were held as follows :—

Madras	One.
United Provinces	*Nil.*
Central Provinces and Berar	One.
Punjab	Two.
Burma	One.

In Bengal a Sub-Committee of the Provincial Board of Agriculture deals with cotton matters. In Bombay no Provincial Cotton Committee has yet been appointed and several matters which normally would be dealt with by such a Committee were referred by the Government of Bombay to the Central Cotton Committee and dealt with mainly by their Local Sub-Committee. Other local cotton matters are dealt with by the Divisional Cotton Committees appointed by the Government of Bombay which met during the year as follows:—

Sind	Once.
Gujerat	Twice.
Khandesh	Four times.
Southern Division, Dharwar	Once.

In Madras, Local Cotton Committees exist for the following areas:—Nandyal, Bellary, Guntur, Tuticorin and Tiruppur.

CHAPTER II.

THE WORK OF THE YEAR.

The Cotton Transport Act.

19. Bombay.—This Act was in force in the Bombay Presidency throughout the year in the following areas:—

In Gujerat three protected areas were maintained, *viz:*

The South-Surat zone, the Surat zone, and the Olpad Ankleshwar zone.

In the Southern Division also three protected areas were maintained, *viz:*

The Kumpta-Dharwar zone, the Bijapur zone, and the Bagalkot zone.

In this Presidency the restrictions apply to the transport of cotton (kapas and seed) by road as well as by rail. The enforcement of the restrictions on transport by road between the three comparatively small Surat zones has always presented some difficulty, but these restrictions were necessary so long as a definite area of inferior cotton existed in the Olpad taluqa. The replacement of short-stapled varieties by the improved variety 1027 A.L.F. having made considerable progress—and the active co-operation of the Co-operative Society in the tract between the Tapti and Nerbada in this policy having now been secured—the Government of Bombay withdrew the restrictions on the transport of cotton by road between the South-Surat, Surat and Olpad-Ankleshwar zones on August 10th, 1926, the first crop to be affected by the changed condition being that to be harvested in March-April 1927. It has been made a condition of the concession that the amending notification will be cancelled if inferior cotton is found to be grown in any of the protected areas. The restrictions on the transport of cotton by rail between the 3 zones have been maintained. (For amending notification see Appendix I.)

The question of applying the Act to the protection of a Broach area is still under consideration.

20. BARODA.—The Baroda Government continued to enforce a similar law and maintained three zones corresponding with the Bombay protected areas.

21. RAJPIPLA.—The Rajpipla State also maintained in force a State law on the same lines as the India Act, the whole State being constituted as one area since it now grows one improved variety of cotton.

The history of Rajpipla cotton provides an excellent example of what can be done by the exclusion of inferior cotton coupled with the systematic introduction of superior seed. Some years ago, the cotton of this State was almost a drug on the market.

Since then the Surat 1027 variety has been steadily introduced and in this way, with the assistance of the cotton Transport Act and of State control of the ginning factories, the standard of Rajpipla cotton has been raised to equal that of the best Surat. On the recommendation of the Indian Central Cotton Committee the East India Cotton Association introduced special standards for Rajpipla cotton in Bombay from June 1st, 1925.

22. Most definite information has been received from all sources as to the value of the Act in improving and maintaining the quality of the cottons grown in these areas. The opinions of millowners, which are reproduced in Appendix II, show very definitely that since the Act was brought into force Indian mills have been able to purchase more freely of these stapled Indian cottons. Further, the trade records indicate that the improved quality of the cottons has been reflected in the prices paid. Local enquiry in the districts shows that enhanced prices have been realised by the cultivators.

In the southern part of the Presidency the Act has continued to work smoothly. Such complaints of mixing as are now received refer to the mixing of ordinary Dharwar-American cotton with the Agricultural Department's improved strain of Upland, the mixing of ordinary Kumpta with the Department's pure strain of improved Kumpta and the mixing of Kumpta and Upland cottons. This question should largely settle itself as the areas under the improved varieties extend, and there is no doubt that the grosser forms of adulteration, such as the mixing of short-stapled Khandesh cotton, or Bombay mill waste, with valued stapled cottons, have been stopped.

23. MADRAS.—The Cotton Transport Act was put into force in the Madras Presidency by notification No. 344 of the 18th of November 1925 approved by resolution of the Madras Legislative Council on August 26th, 1925, a copy of the notification will be found in Appendix III.

In the Northerns and Westerns area the notification appears to have worked smoothly and to have achieved the desired object. Certain difficulties, however, have arisen over the administration of the Act in the South. Satisfactorily to protect the more important staple cotton areas it would be desirable to replace the two existing zones, *viz*: the Tiruppur-Cambodia and Tinnevelly zones by four, *viz*: a smaller Tiruppur-Cambodia zone, a Dindigul zone embracing the tract south of the Tiruppur-Cambodia zone, a Tinnevelly area and a Salems area. This course apparently would not immediately be practicable, and a less complete division is all that can be attempted at present. In particular the necessity of allowing *kapas* to move freely from the country around Dindigul both to Tiruppur and to Virudhunagar (situated in the Tiruppur-Cambodia and Tinnevelly zones respectively) has been strongly urged. The matter has been fully discussed both in the Central Cotton Committee and in the Madras Provincial Cotton Committee and the present zones will be revised in the light of the experience gained.

As to the need of the Cotton Transport Act in Madras to keep out such thoroughly inferior cottons as *Pulichai* (G. neglectum roseum) and Mysore-American from the staple cotton tracts and to keep Coconadas cotton out of the Northerns and Westerns area there is little or no difference of opinion. The degree to which the organisation can be elaborated to assist the Agricultural Department's efforts to establish compact blocks of superior cottons is a point on which there is less unanimity and here it will be necessary to progress gradually, due regard being given at each stage to the legitimate requirements of the cotton trade, to the existence of suitable markets and to the adequacy of ginning facilities in the various tracts.

24. It is with regret that the Committee record that no action has yet been taken by the Government of the Central Provinces

and Berar to give effect to the recommendations made by the Indian Central Cotton Committee and by the Central Provinces Provincial Cotton Committee in 1923 that protected areas should be created in the Central Provinces and Berar, respectively, to prevent the abuses which take place at present.

REGULATION OF GINS AND PRESSES.

25. The Cotton Ginning and Pressing Factories Act, which was passed by the Indian Legislature in March 1925, came into force on August 8th of that year and hence has been in force for the whole of the cotton season 1925-26. The Central Cotton Committee devoted considerable attention to the marking of bales, the central feature of the Act, and it is satisfactory to record that no serious difficulties have been met with in complying with the rules. At the commencement the majority of presses used hand punches for applying the press mark to the central hoop (the hoops being stamped before pressing) but two suitable punching machines, both inexpensive, were rapidly put on the market and the use of such machines is steadily increasing. Once pressing factories settled down to the fact that they had to mark their hoops little difficulty was experienced. No cases have come to the notice of any member of the Committee where the punching of the press-mark on the hoop has resulted in the weakening of the hoop or of burst bales during pressing.

26. Some delay occurred before all presses marked their bales systematically. Returns were obtained from various members of the Committee and from the East India Cotton Association of places from which unmarked bales were still being received and the attention of the Provincial authorities called to the matter. There has been steady improvement in the marking of bales and a further incentive to careful compliance with the law has been afforded by

the new bye-law of the East India Cotton Association which is quoted below :—

Bye-law 53 (1).

" Against the Hedge contracts shown in column (1) of Schedule B, the contracts shown in the corresponding column (2) and the cotton pressed only at the places enumerated in the corresponding column (3), subject to such modifications as the Board may from time to time make thereon against each contract, shall alone constitute a fair tender provided that :—

(1) *It is of the description sold and provided that if pressed after* 1*st September* 1926 *it bears press marks in conformity with the provisions of the Cotton Ginning and Pressing Factories Act of* 1925 *: or with the law in force for the marking of bales in any Indian State.*"

This bye-law is in accordance with Section 14 of the Act which provides that after the expiration of one year from the commencement of the Act any person who has made a contract for the purchase of baled cotton may require that no bales other than bales marked in accordance with the Act shall be supplied in fulfilment of such contract and may refuse to accept bales which are not so marked. This section became effective on the 8th of August 1926 and hence for the cotton season commencing September 1st of that year.

27. The rules under the Act leave to the owner of a pressing factory the option of marking the running number on the bale either by punching it on the central hoop or by stencilling it on the hessian on the flat side of the bale. Most press-owners have adopted the latter alternative but, for the better protection of the reputation of their presses, some press-owners who bale cotton both for themselves and for other clients have decided to punch the running numbers on the hoops, especially in the case of clients' cotton. On the whole

the running numbers on the hessian have been found satisfactory. Some complaints have been received that the punch marks on the hoops are small and not easily found, but any minor inconvenience in this respect is of less importance than the considerations which led the Central Cotton Committee to decide that the press mark should be placed on the hoop for, in view of Section 14 of the Act, it is essential that so long as a bale of cotton remains a merchantable bale so long shall it bear the mark of the press. A few instances of difficulty, owing to secondhand hoops having been used, have been reported, but in no case is it clear that any real confusion has arisen on this account. In the first place new hoops are insisted upon by most buyers when the cotton is for export and secondly a very large number of pressing factories use only new hoops. Secondhand hoops are sold periodically by Indian mills and are purchased by those press-owners who use secondhand hoops but in the majority of cases, there is little likelihood of a hoop being used twice in the same season, though such a possibility exists in the case of cotton purchased locally by up-country mills. The remedy lies largely in the hands of buyers, (*i.e.*, of the mills) since they are entitled to insist that cotton delivered to them shall be correctly marked. Further, with very little trouble mills could ensure that no marked hoops leave the mill compound in time to be used again during the same season. Many mills ordinarily use up marked hoops for other purposes, such as piece-goods bales, thus avoiding their return to the market. There appears to be no reason for any modification in the present rules for the marking of bales.

28. It is satisfactory to record that a number of Indian States have taken steps to put similar legislation into force. In order to avoid confusion the Central Cotton Committee drew up a list of press marks proposed for the various States which, after certain alterations to meet the wishes of certain States, has been approved by the Government of India and has been adopted. In Appendix

IV will be found the press marks prescribed for the different provinces and different States. The marking of bales has already been adopted by the following States :—

Alipura,	Jaipur,
Alwar,	Jodhpur,
Baroda,	Katosan,
Cambay,	Nabha and
Hyderabad (since the close of the year),	Rajpipla.

The Baroda State have passed a law on the lines of the Cotton Ginning and Pressing Factories Act and this law is already in force. The Rajpipla State had previously passed a Cotton Improvement Act which, in several respects, goes considerably further than the Cotton Ginning and Pressing Factories Act; they have therefore made rules under their own Act prescribing the marking of bales, the returns and records following the same lines as the system in force in British India. Other States, almost without exception, have replied that they are prepared to take action on the lines of the Cotton Ginning and Pressing Factories Act. In the Indore State the Act and Rules will come into force on September 1st, 1927, and the Hyderabad State has accepted the principle of the marking of bales, but still has under consideration the question of whether their own Act should provide for the licensing of gins and presses. By the end of the present cotton season it is expected that practically all Indian States will have brought their rules into force. It will be observed that the bye-law passed by the East India Cotton Association is so worded as to provide that baled cotton from any Indian State which has introduced rules for the marking of bales must be marked in accordance with such rules in order to be tenderable.

29. The weekly statements of cotton pressed throughout British India, which the compulsory returns under the Act have now rendered possible, commenced in September 1925 and these returns have already proved of great value both to the cotton trade and to Agricultural Departments. The value of these returns will increase as time goes on as comparison with the figures for the previous year will enable the cotton trade to gauge the progress of the marketing of the crop, thus affording most important independent statistics as well as a supplement to the provincial cotton forecasts. As a check on the cotton forecasts the present returns have already proved of value since they have enabled the sources of important errors in Sind and the Punjab to be traced to their source and steps taken to prevent a repetition of such errors in future years. In both cases the pressing returns showed that the production had been considerably under-estimated. In Sind the error in forecasting was due to imperfect returns from the districts concerned—both of areas and condition. In the case of the Punjab the analysis of the figures of different trade blocks showed that much larger quantities of cotton had been pressed than the forecast yields indicated. In one block the fact was brought to light, that owing to a recent extension of irrigation facilities, the Ferozepore district has become much more important as a cotton-growing area than previously, and the conventional estimates have now been replaced by regular returns as in other districts. In the Multan block the discrepancy was partly due to cotton from Indian States coming into British territory for pressing and partly to the yield from the late pickings having been much larger than was expected when the final forecast was issued. The following Indian States are now sending in regular weekly returns of cotton pressed :—

Nabha, Jodhpur, Jaipur, Alipura, Rajpipla and Baroda.

Here also it is hoped that by the beginning of the cotton season 1927-28 all the more important cotton-growing States will have come into line with British India in this important matter.

30. In connection with the prevention of malpractices the need for the present Act has been exemplified during the year. Complaints had been received for over a year of the unsatisfactory quality of Sind and Sind-Punjab *desi* cotton which had been sold to the Continent, the principal complaint being in regard to the unreasonable quantity of seed, and even of unginned *kapas*, present in such cotton. The matter was taken up by the Bremen Cotton Exchange with the International Federation of Master Cotton Spinners' and Manufacturers' Associations and both organisations communicated with the Central Cotton Committee on the subject. This type of *desi* cotton, which is of short staple, is used, amongst other purposes, for the manufacture of coarse hosiery yarn and the presence of seed in the cotton not only causes considerable difficulties in spinning but frequently makes the yarn unsuitable for the purpose intended. The buyers reported details of the press marks on the bales complained of which enabled the cotton to be traced to the factory where it was pressed which, in this particular instance, proved to be a factory belonging to the exporting firm. The matter was taken up with the exporters and it is probable that the publicity that has been given to this complaint will result in its being remedied.

31. Two other abuses which are still of great importance are the mixing of Punjab-American cotton with short staple cotton, and the watering of cotton in presses, more particularly in the Central Provinces and Berar. These subjects are receiving attention; it is sufficient to say here that the Cotton Ginning and Pressing Factories Act places a buyer in a much better position to protect himself against unsatisfactory cotton of this description than he previously occupied.

COTTON STATISTICS.

32. Reference has already been made to the valuable statistics now provided through the medium of the Cotton Ginning

29. The weekly statements of cotton pressed throughout British India, which the compulsory returns under the Act have now rendered possible, commenced in September 1925 and these returns have already proved of great value both to the cotton trade and to Agricultural Departments. The value of these returns will increase as time goes on as comparison with the figures for the previous year will enable the cotton trade to gauge the progress of the marketing of the crop, thus affording most important independent statistics as well as a supplement to the provincial cotton forecasts. As a check on the cotton forecasts the present returns have already proved of value since they have enabled the sources of important errors in Sind and the Punjab to be traced to their source and steps taken to prevent a repetition of such errors in future years. In both cases the pressing returns showed that the production had been considerably under-estimated. In Sind the error in forecasting was due to imperfect returns from the districts concerned—both of areas and condition. In the case of the Punjab the analysis of the figures of different trade blocks showed that much larger quantities of cotton had been pressed than the forecast yields indicated. In one block the fact was brought to light, that owing to a recent extension of irrigation facilities, the Ferozepore district has become much more important as a cotton-growing area than previously, and the conventional estimates have now been replaced by regular returns as in other districts. In the Multan block the discrepancy was partly due to cotton from Indian States coming into British territory for pressing and partly to the yield from the late pickings having been much larger than was expected when the final forecast was issued. The following Indian States are now sending in regular weekly returns of cotton pressed :—

Nabha, Jodhpur, Jaipur, Alipura, Rajpipla and Baroda.

Here also it is hoped that by the beginning of the cotton season 1927-28 all the more important cotton-growing States will have come into line with British India in this important matter.

30 In connection with the prevention of malpractices the need for the present Act has been exemplified during the year Complaints had been received for over a year of the unsatisfactory quality of Sind and Sind Punjab *desi* cotton which had been sold to the Continent, the principal complaint being in regard to the unreasonable quantity of seed, and even of unginned *kapas*, present in such cotton The matter was taken up by the Bremen Cotton Exchange with the International Federation of Master Cotton Spinners' and Manufacturers' Associations and both organisations communicated with the Central Cotton Committee on the subject This type of *desi* cotton, which is of short staple, is used, amongst other purposes, for the manufacture of coarse hosiery yarn and the presence of seed in the cotton not only causes considerable difficulties in spinning but frequently makes the yarn unsuitable for the purpose intended The buyers reported details of the press marks on the bales complained of which enabled the cotton to be traced to the factory where it was pressed which, in this particular instance, proved to be a factory belonging to the exporting firm The matter was taken up with the exporters and it is probable that the publicity that has been given to this complaint will result in its being remedied.

31 Two other abuses which are still of great importance are the mixing of Punjab American cotton with short staple cotton, and the watering of cotton in presses, more particularly in the Central Provinces and Berar These subjects are receiving attention, it is sufficient to say here that the Cotton Ginning and Pressing Factories Act places a buyer in a much better position to protect himself against unsatisfactory cotton of this description than he previously occupied

COTTON STATISTICS

32 Reference has already been made to the valuable statistics now provided through the medium of the Cotton Ginning

and Pressing Factories Act. Voluntary returns of loose cotton received in spinning mills are now regularly received from the principal cotton provinces and several States.

33. The Government of India has accepted the recommendation of the Central Cotton Committee that the internal rail-borne trade returns for cotton should be re-established and arrangements for the publication of these in the *Indian Trade Journal* have recently been made. It is as well to emphasise that the rail-borne trade returns are of comparatively little direct use for trade purposes, though the new method of compilation and publication may increase their value in this respect. The real value of these statistics is the means which they afford to Directors of Agriculture, and other officers responsible for the preparation of cotton forecasts, of checking the basis of their forecasts by means of independent figures which enable the total production in certain blocks to be calculated. References to the statistics of cotton consumption published with the final cotton forecasts by the Director-General of Commercial Intelligence and Statistics show that even when allowance is made for the changes in Bombay stocks from year to year (and it should not be forgotten that such stocks may vary by as much as half-a-million bales) the amount of cotton consumed in India and exported has generally been considerably larger than the estimated crop. As there is no means of testing the accuracy of the conventional figure adopted for non-mill consumption, it is impossible to check the crop forecasts properly from consumption figures. But if it be assumed that non-mill consumption does not vary greatly from year to year, it will be seen that there is a considerable error in the forecasts generally, though not always, in the direction of underestimation. With the help of the cotton press returns and the new rail-borne trade statistics it is hoped that the various sources of error will be located, thus enabling an improvement to be effected in the accuracy of the forecasts.

34. The Central Cotton Committee publishes a monthly statement of the consumption of *Indian* cotton consumed in Indian mills based on returns received under the Cotton Cess Act and direct returns received from the Indian States mainly concerned.

FINANCE OF THE COTTON CROP.

35. As indicated in the last report it was decided to undertake local investigations in four areas, *viz.*, Khandesh, Berar, North Gujerat and the Northerns and Westerns area in Madras. These investigations have now been completed and the reports considered by the Committee. The village investigations were directed to ascertaining certain details from each cotton grower in each of the villages selected for the enquiry as being typical of the tract under investigation. Replies were received from the following numbers of individual cultivators in each tract :—

Khandesh	813
Berar	940
North Gujerat	1,065
Madras Northerns and Westerns ..	758

The borrowings of each cultivator, the source of the loan, the interest paid, the conditions of the loan, details of the crop produced, of the method of sale, of the prices obtained and of the time of sale were recorded. The views of cultivators on their marketing difficulties were also elicited and, particularly in Berar and Khandesh, a good deal of first-hand information was obtained as to the working of the local cotton markets. In addition the investigators themselves visited the markets and obtained details of the disposal of a large number of individual cart-loads of kapas—both of those brought in by cultivators themselves and those brought in by middlemen. The most outstanding results were those obtained from Khandesh and Berar where the investigations were well carried out and the results fully worked up. The North

Gujerat enquiry also gave considerable information of importance, but owing to the fact that the area chosen produces *Wagad* cotton (the closed boll variety), a complicating factor, *viz.*, the sale of bolls, was introduced which rendered it difficult to generalise from results recorded. Nevertheless, in addition to providing local information of real value, this enquiry in several respects confirmed the conclusions arrived at from the Khandesh and Berar investigations.

36. In the Madras Northerns and Westerns area the investigation was carried out under somewhat different conditions. For the three tracts referred to above a wholetime staff, the cost of which was met by a grant from the Committee, was employed. In Madras an attempt was made to obtain the necessary information through the medium of agricultural assistants engaged on district work without relieving them of their own duties. As a result only a portion of the enquiry could be completed and while most useful information in regard to cotton growers' borrowings was obtained the data on sales were entirely inadequate owing to the agricultural assistants being very fully engaged on other duties. Hence it has been decided to repeat this investigation with a full-time staff next year.

37. In Appendix V will be found a summary of the reports on the Khandesh, Berar and North Gujerat investigations but a few of the broader conclusions may be referred to here. In the first place it was definitely shown that in Khandesh and Berar the sale in advance of the standing crop, forward sales on any considerable scale and the mortgaging of the crop are now practically unknown. It was also established that although cultivators had borrowed considerable amounts from money-lenders and Co-operative Societies for the financing of their agricultural operations, they were not hampered by their borrowings in disposing of their crop to

what they considered the best advantage. Further in a large majority of cases, both in Khandesh and Berar, the money-lenders were not purchasers of kapas. It has generally been assumed that the cotton grower stands in urgent need of money about the time when his crop is ready and is therefore driven to sell it at once even at unfavourable rates. This supposition, however, was not in accordance with the experience of some of the co-operative banks and was abundantly disproved by the facts elicited by local investigation. In Khandesh and Berar far from rushing their *kapas* to market growers were found to hold up their *kapas* for considerable periods presumably in the hope of an improvement in price and in many instances sales were not completed until March and April although, the crop having been distinctly an early one, picking had been completed about December. The crops of the year were not particularly good ones, prices on the whole were falling steadily and the general information obtained suggested that the earlier sales were made less through financial pressure than because the growers were not inclined to take risks.

38. The nett result of these enquiries may be summed up in the statement that what the cotton grower appears to need most, once his crop is ready for market, is better market organization and that finance at this stage is of secondary importance.

39. The two areas, Khandesh and Berar, which have so many general features in common were deliberately chosen because in Berar open cotton markets controlled by law have been in existence for many years, whilst in Khandesh such markets as exist are entirely unregulated. At various times critics of the Committee's proposals for open cotton markets have expressed considerable doubt as to the number of cotton growers actually using such markets. This question was investigated in two different ways. In the village enquiry the disposal of each cultivator's

cotton was recorded; in the market enquiry the source of every cart-load of cotton recorded was enquired into. The average for the Berar villages shows that the kapas of 53 per cent. of the cotton growers, and 68 per cent. of the total kapas sold in the period under investigation, was marketed in the open markets by the growers themselves. The market records showed that of the 2,343 individuals bringing kapas to market who were recorded, 2,050 or 86·5 per cent. were actual cotton-growers. This disposes at once of the contention that cotton growers do not use open cotton markets.

40. In Khandesh where the markets are unregulated, as might be expected, the proportion of cultivators who took their cotton to markets instead of selling locally to travelling middlemen or village dealers, was smaller than in Berar. The following table shows the actual percentages :—

Percentage of cultivators selling in :—

	Market.	Village.	Partly in Market and partly in Village.
	Per cent.	Per cent.	Per cent.
West Khandesh	19	69·5	11·5
East Khandesh	8·5	91·5	....

On the whole, it may be said that the number of cultivators using such cotton markets as exist in Khandesh is considerably higher than was expected. The number of cultivators, who, at various times, had used such markets but had not done so this year, was considerable and it seems clear that if open cotton markets in Khandesh can be properly regulated they will be largely used by cotton growers. The cotton growers' objections to the unregulated markets as at present existing, may be summarised as follows. Great

exception is taken to the system of secret bids and all growers urged that in cotton markets all bids should be open and the rates properly announced. Secondly, in many cases, the rates actually paid were not those settled in the markets. Both in Berar and Khandesh weighment usually takes place in the ginning factory and in Khandesh in particular the rate actually paid is really settled after weighment has taken place. The deductions, which are made after weighment has commenced, frequently are very substantial, and in a few cases were so heavy that the sellers took their *kapas* away. Such cases were rare and growers stated that they had to accept the rates paid even when they realised that they were unfair. A number of cultivators stated that although in the markets the weighments and prices are better than they can obtain in the village yet, owing to the disputes referred to above, they prefer to sell locally. In some of the Khandesh markets a number of other abuses seem to be prevalent and cultivators complain of unjustifiable deductions from weight and of deductions of various kinds, generally alleged to be for charities, from the price.

41. The major complaints about the Berar markets were not dissimilar to those in Khandesh. There was less complaint about weighments or illegal deductions but complaints about disputes during weighment were almost as numerous. On the other hand rates were very much better known in Berar and cultivators, though not satisfied with the market management, realise that the markets are of advantage and use them accordingly. In their draft model rules for open cotton markets the Central Cotton Committee proposed a number of amendments to the present Berar rules, but it is now clear that even if the present rules were properly enforced the complaints would be infinitely fewer. The main need is to re-constitute the Market Committees for the Berar markets in such a way as to provide for representation of the cotton grower. At present the markets are managed almost entirely by buyers and their

commission agents, an obviously one-sided arrangement. Another matter which would seem to require attention in any amendment to the Berar rules is the fact that in Berar at present the brokers (who are licensed by the Market Committee), who sell on behalf of the cultivator, are not independent selling brokers. It was represented that brokers who act for both sides invariably watch the buyers' interests.

42. Constructive action should be possible in one other direction. If a cotton grower who has brought his cotton some distance from the market is offered an unsatisfactory price he is at present obliged either to accept the price offered or to take his cotton away and the latter alternative is often impracticable. There seems to be a real need for some form of warehousing facilities at the markets to obviate this difficulty. Probably any such warehousing agency would also need to make advances to the grower against kapas deposited for sale. This is a matter which requires careful investigation in the light of local conditions.

FURTHER INVESTIGATIONS.

43. The Committee has decided to finance further investigations during the cotton season 1927-28 in four areas, *viz.*, Sind, the Punjab, the North of the Broach cotton-tract and the Madras Northerns and Westerns area. It appears obvious that only by such local investigations, will the actual facts be obtained and it is only on such a basis of facts that constructive measures for the assistance of the cotton grower can be based. The results already obtained to a certain extent have been unexpected and for the areas investigated have revealed an unexpected degree of independence on the part of the cotton grower. It would be premature to draw general conclusions for the whole of India from investigations in three tracts.

OPEN COTTON MARKETS.

44 In the preceding section detailed references have been made to open cotton markets in Berar and Khandesh Since the close of the year the Government of Bombay have published a Bombay (District) Cotton Markets Bill which will come before the Local Legislature shortly. The Bill follows in its essentials the recommendations of the Central Cotton Committee Information has also been received that the revision of the Central Provinces and Berar Cotton Market Rules is now under consideration and there is a hope that cotton markets in that province will now be placed on a more satisfactory footing, it should be stated that even now they are probably more satisfactory than those in any other part of India

MARKETING OF IMPROVED VARIETIES OF COTTON

45 The Indian Central Cotton Committee has continued to devote attention to this aspect of cotton marketing Reference was made in last year's report to the need of obtaining for growers, during the early stages of the introduction of a new variety, the full price for the new product even while production has not reached a stage at which the new cotton will attract attention in the major cotton markets As was then stated, if an Agricultural Department is to succeed in organising the seed supply and in establishing a new cotton in compact areas, which is so essential to real progress, it needs to be in a position to assure to the grower an adequate reward for his enterprize If new cottons are brought to their notice, there are numerous buyers in India who are willing to pay full prices for comparatively small lots, and in fact much of the progress made by the Agricultural Departments in the past has been due to the support given to them by individuals in this way The Central Cotton Committee endeavours to assist matters at this stage by the provision of spinning test reports, which will indicate to consumers

what the possibilities of the new cottons are, and also by circulating to the cotton trade information as to the areas under new types of cotton, the approximate quantity produced and the markets where they can be obtained. As was indicated last year probably the most difficult stage is reached when a new cotton has passed the scale at which the Agricultural Department can keep in personal touch with the growers but has not yet reached the stage of being generally known on the major markets. In addition to the steps referred to above the Committee in several instances has been able to assist Agricultural Departments in disposing of small quantities of superior cottons.

46. Another method adopted is to supply the East India, Liverpool and Manchester Cotton Associations with type bales of improved varieties of Indian cotton. Such type bales serve a double purpose for in the first place they bring new cottons to the notice of consumers and secondly, provide authentic types with which intending purchasers can compare the cottons offered to them through the usual trade sources. Both in India and abroad, especially the latter, Indian cottons are sold against private types which do not correspond either with the East India Cotton Association standards or with the Agricultural Department's nomenclature. It is considered impossible to interfere with this system of sale, which has become a well established feature of the Indian export trade, but it is practicable to place both producers and sellers in a position to compare private types with the Agricultural Department's own types. Such type bales are only supplied for cottons which have been established on a commercial scale.

SPINNING TESTS.

47. More detailed reference to the tests which have been carried out on standard Indian cottons at the Technological Laboratory will be found in that section of the report and in the report of the

Director. An Annual Bulletin on these tests is published, and arrangements have now been made to carry out such tests at an early stage in the harvesting of the crop of each season in order that the results may be available to the trade in India shortly after the cotton comes on to the market in quantity. The seasonal variation in the quality of particular growths of cotton is a recognised fact and the Technological Laboratory is steadily accumulating data showing the range of such variations from season to season. The tests referred to above are carried out on samples grown under the Agricultural Department's own control and which have probably been somewhat more carefully handled than commercial cottons. Hence these tests represent the behaviour in spinning of new cottons grown under good, if not optimum, conditions and may not be representative of the bulk of the crop. But they do indicate the variation in the same cotton grown from year to year under standard conditions and it is hoped that the results will be of interest to the trade and will assist in the marketing of new varieties.

48. Through the kind assistance of the Empire Cotton Growing Corporation and of the Oldham Master Cotton Spinners' Association, a further series of tests on improved Indian cottons capable of replacing Americans for many purposes have been carried out at Oldham under ordinary Lancashire mill conditions. These tests have confirmed in a most interesting manner the results obtained in the Technological Laboratory and indeed were more in the nature of a demonstration than an experiment. The results are reproduced in Appendix VI and show clearly that several of the Indian staple cottons are capable of replacing Americans. Temporarily this point has become of somewhat academic interest since the record American crop of 1926, following the large crop of 1925, has assured an abundant supply of American cotton for English and European mills. Further, apparently as a result of a temporary shortage of stapled cotton in India the prices of Indian cottons have been considerably

above American parity, and there has been an actual import into India of appreciable quantities of American cotton for use in Indian mills. Nevertheless the capabilities of these improved Indian cottons have now been established definitely, and it is probably only a matter of time before the export demand for them is renewed.

THE LIVERPOOL EMPIRE FUTURES COTTON CONTRACT.

49. In last year's report reference was made to the new Empire Contract in Liverpool against which Indian cottons of approximately an inch in staple and of suitable grade are tenderable. Throughout the year the Central Cotton Committee has kept in very close touch with the development of this hedge contract and in last year's report it was stated that the new contract was of very limited application to Indian cottons for a variety of reasons. Whilst on leave the Secretary had an opportunity of placing before the Directors of the Liverpool Cotton Association the Committee's views on the contract and their suggestions for improvement. As at present framed the contract is a narrow one, since cotton to be tenderable must be of fair staple, equal to Strict Low Middling American in grade and not lower than Strict Low Middling American in value. The Empire contract, on account of the wider range of cotton tendered against it, naturally is at a small discount on the American futures contract, against which Low Middling American is tenderable, and there seems no reason why the Empire contract should be stricter than the Liverpool American contract. A further difficulty in practice is that no standards have been established for the Empire cottons tenderable against the Empire contract and hence such cottons have to be judged against American standards. This is unsatisfactory and instances are on record where a cotton, which otherwise would have been classed as points 'on' for grade and staple, has been actually rejected on account of a difference in colour. An indication has already been received from the Liverpool Cotton Association that

by the provision of a " franchise " any difficulty over the value clause of the contract might be obviated. The Central Cotton Committee have urged that in addition to this the contract should be broadened by admitting cotton not below Low Middling American in grade, and further have urged the importance of establishing a certain number of standards for Indian cotton against which Indian cottons tendered against the Empire contract would be judged. In the opinion of the Committee the Empire futures contract is not likely to be of real use to Indian exporters unless modifications on these lines are made. The Committee's views received a careful and sympathetic hearing from the Directors of the Liverpool Cotton Association, and it is understood that the question of amending the contract is now under consideration. Whether it will be found possible to make the alterations which the Central Cotton Committee have recommended cannot yet be stated, for it must be borne in mind that this contract is also intended for use as a hedge for such Empire cottons as Uganda which are considerably above Middling American in value on account of their superior staple.

MEASURES TO PREVENT THE INTRODUCTION OF THE MEXICAN BOLL WEEVIL.

50. As stated in last year's report a notification was issued by the Government of India under the Destructive Insects and Pests Act, 1914, restricting the importation of American cotton to one port for the whole of British India, *viz.*, Bombay, and permitting it there only on condition of fumigation with Hydrocyanic acid gas. The notification came into force on 1st December 1925. It was originally intended to restrict importations to the fair weather season (November 1st to May 31st), but in order to meet the needs of the Bombay mills, and as it was found that fumigation could be carried out effectively during the monsoon, this restriction was removed. During the fair-weather period American cotton is landed after fumigation at the special cotton wharf at Haji Bunder. During

Sample bales not exceeding six in number are fumigated at a special fee of Rs. 10 per bale. Subject to these exceptions the minimum fee for a consignment of American cotton is Rs. 150.

53. Since the close of the year American cotton importations have increased very greatly in volume owing partly, no doubt, to the large American cotton crop and low prices, but more particularly to the temporary shortage of certain classes of Indian staple cotton. The Committee has devoted much attention to ensuring that the charge to the importer shall be kept to an absolute minimum. The quantity of American cotton imported from December 1925 to October 1926 amounted to 43,501 bales; advices indicate that quantities as large as this will be handled during individual months during the coming season. Fumigation is supervised by an Assistant from the Committee's Technological Laboratory and carried out by a temporary staff of fumigating chemists provided by Government.

54. Owing to the larger American crops and the indications that boll weevil damage in America is now much less than in the past, the suggestion has been made that the fumigation of American cotton imported into India is no longer necessary. The fact should not, however, be overlooked that seasons of high and low intensity are a common feature of most insect pests. Further, there is little doubt that the reduction in damage caused to the American cotton crop by the boll weevil is largely due to the very extensive, and expensive, control measures adopted to fight this pest. Until it can be scientifically proved that there is no risk of the boll weevil reaching India alive, the interests of cotton-growing in India require that all necessary precautions should be taken to prevent the introduction into this country of what is probably the most destructive insect pest of recent years.

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57. In the Research Laboratory considerable progress has been made with the scheme of work for the examination of the measurable characters of the cotton fibre and the correlation of such data with spinning tests. The importance of such work and its bearing on cotton breeding has been explained in previous reports and in the Committee's report on the "Present Position of Cotton Research in India." It is sufficient to say here that extensive data on the spinning properties of various cottons are being gradually built up in the course of the work of the laboratory and that at the same time data are being obtained for those fibre characters likely to have a bearing on spinning value with the object of correlating the two series of data and throwing some light on the relative importance of individual fibre characters. The second part of the work is laborious, methods and apparatus have to be designed and tested and the range of variation in each character determined. Several methods have now been worked out and are in regular use and methods for other determinations are under trial.

58. The Director of the Laboratory, Mr. Turner, was absent on leave during a portion of the year, part of the time being devoted to the study of the methods and apparatus adopted by similar Research Institutes in England. The Committee, by formal resolution, recorded their appreciation of the excellent work done by the Officiating Director, Mr. W. G. P. Wall, M.Sc., I.E.S., whose services were so kindly lent to the Committee by the United Provinces Government.

59. *The Indore Institute of Plant Industry.*—The annual report of the Director will be found in Appendix VII together with a supplementary report subsequently received. It will be seen that

ROYAL COMMISSION ON AGRICULTURE.

55. The Committee furnished the Commission with a memorandum outlining their constitution and aims and indicating the work accomplished and in progress. They also submitted written answers to those portions of the questionnaire issued by the Commission on which they were able to supply information or in regard to which it was possible for the Committee to put forward a corporate opinion. The Vice-President (Sir Joseph Kay) and the Secretary were selected to give oral evidence before the Commission.

CHAPTER III.

RESEARCH.

56. *Technological Research Laboratory.*—The report of the Director of the Technological Laboratory will be found in Chapter IV. The year has been one of steady progress in all directions. The facilities which the Spinning Laboratory offers have been freely taken advantage of by various Agricultural Departments, and there is no doubt that the arrangements which have been organised for testing new cottons are appreciated. Work on standard Indian cottons, most of which are those improved types which the Agricultural Departments have established on a commercial scale, has been continued on the lines originally laid down but with extensions in several directions. The Bulletin describing the full details of the results of such tests and the procedure adopted, which was published in April 1926, was received with considerable interest; a further edition will be issued in April 1927 giving the results of a further year's work. As it has been found that the work on the variations of such standard cottons from season to season is of considerable interest to the cotton trade, arrangements have recently been made for the results with individual cottons to be separately pub-

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in less than two years from the time when Mr. Howard assumed charge the buildings and equipment have been completed, that the Institute is in full working order and that a considerable amount of experimental work is in hand. In Appendix VIII will be found the general programme of work of the Institute which was laid down when the scheme was approved. Briefly, it may be said that the main work of the Institute will be the general botany, physiology and genetics of Indian cottons. In addition a number of agricultural investigations connected with cotton-growing on the black soils are being undertaken.

60. *Research Grants.*—The oldest of the various research schemes for which the Committee gives grants have been in progress about three years. In Appendix IX will be found a technical note on the various schemes. The Committee's grants have been divided amongst various branches of agricultural research on cotton as follows :—Plant Breeding, four; Cotton Entomology, three ; Cotton Physiology, three ; Cotton Mycology, three.

Annual progress reports on each scheme are carefully considered by the Agricultural Research Sub-Committee, recommendations and suggestions made in regard to future work and a report placed before the full Committee for discussion. On several schemes the stage has now been reached where results are beginning to appear, and some of the scientific results obtained are being published shortly in the Memoir and Bulletin series of the Imperial Department of Agriculture. It may be permissible here, however, to refer to some of the main features of the progress reports, though it should be understood that many of the conclusions are tentative and that on all these problems considerable further work is necessary.

61. The object of the *Herbaceum Cotton Research Scheme* in the Madras Presidency is the isolation and testing of the "Herbaceum" constituents of the local cottons. This type is of great importance

in certain tracts on account of several desirable agricultural characteristics and it is hoped by the isolation of pure lines to secure improvement in lint characters, ginning percentage and uniformity. Several pure lines have now been obtained and are being tested on field scale; sufficient cotton for spinning tests will be available during the coming year.

62. The detailed study of artificial hybrids between Sea Island and Dharwar Upland cotton at Dharwar has yielded several strains of distinct promise which appear to combine with hardiness and agricultural yield a staple which in length and quality is considerably superior to the best of the local cottons. Spinning tests on some of the samples also gave encouraging results. It should be emphasised, however, that the work is still far from complete.

63. *Central Provinces Botanical Research Scheme.*—The object of this work is to produce types of cotton suitable for the Oomras tract possessing the necessary hardiness and resistance to wilt which the tract requires and in addition superior staple. Three such types, which yield well, have shown themselves resistant to wilt and which combine good staple with a reasonable ginning percentage, have now reached the field scale and will be tested under cultivators' conditions during the next season. In addition a general study of the cottons of the province is in progress and the possibilities of securing still further improvement by hybridisation are being fully explored.

64. *The Khandesh Cotton Breeding Scheme* is a new one, the grant having been given to provide an adequate staff for the thorough investigation of some crosses between G. indicum and G. cernuum which have shown considerable promise. The early stages of the work were carried out entirely by the Bombay Department of Agriculture and several of the new hybrids have behaved well

in field trials whilst spinning tests showed that the best strain was suitable for 30s counts as compared to 8/10s for ordinary Khandesh cotton.

65. *The Surat Physiological Research Scheme* is a study of the causes of bud, boll and flower shedding in Southern Gujerat and of the possibility of designing measures to reduce the loss of crop. At the same station an investigation on the Earias Bollworm is being carried out, and the two investigations are closely related since Earias Bollworm is responsible for a good deal of early shedding. The first two years' work showed that the shedding is not to any important extent due either to fungi or bacteria, and, further, that significance of the Earias Bollworm is considerably less than was originally assumed.

66. Work on the two newer physiological research schemes at Sakrand and Coimbatore respectively will be started as soon as the necessary staff is obtained. The Local Governments concerned have taken steps to secure the necessary scientific officers.

67. *The investigation on Pink Bollworm* (*Platyedra gossypiella*), which has been carried out at Cawnpore, financed partly by the Central Cotton Committee and partly by the United Provinces Government, has led to very definite results. In the first place quantitative determinations have been made on the loss of crop, both in quantity and quality, which this pest causes, and it has been shown definitely that when the crop is protected from it the increase both in the quality and quantity of the crop is remarkable. It has also been shown that when the crop is protected from *other* insect pests but infected to a known extent and at a known time by the pink bollworm, damage on the usual scale occurs. It has also been demonstrated both by experiments in cages and in an isolated block of 500 acres with cotton growing under normal cultivator's conditions, that if all seed is treated by heat to ensure the destruction of

pink bollworm larvæ the resulting crop is practically, if not entirely, free from pink bollworm damage. Hence there are now good grounds for believing that if *all* cotton-seed can be so treated the pest can be controlled. Experiments on the flight range of the moths have shown that work must be carried out simultaneously over a large area to prevent re-infection vitiating results of seed treatment. Work on other possible means of re-infection is still proceeding and Egyptian experience would indicate that it is very necessary that such work should be very thoroughly done. The scientific results obtained will shortly be published in full. During the coming year the details of heat treatment for the disinfection of cotton-seed on a large scale will be studied.

68. During the year the Committee sanctioned grants for a period of five years for work on the pink bollworm in the Punjab. This scheme is in no sense a repetition of the work at Cawnpore, for the main object is to determine the factors which make the pink bollworm a comparatively unimportant pest in the canal colonies at present though it is a serious pest in the South-Eastern Punjab. Prior to this grant being made one of the Committee's Research Students (working under the Government Entomologist, Punjab) carried out a careful investigation into the status and distribution of the pink bollworm in that province and has shown that while this pest is practically absent in the Western Punjab including the Canal Colony area and is found in small numbers in the central and northern districts of the province, it is a serious pest in the South-Eastern Punjab and is found in alarming numbers in the Eastern Punjab. In other words, conditions in the Eastern and South-Eastern Punjab are almost identical with those in the United Provinces so far as this pest is concerned. There is, however, an indication that climatic or other factors have prevented this pest from spreading to the same extent through the canal colony area and the Western Punjab, and it is extremely important that it

should be ascertained definitely if, in fact, such limitations do exist and, if so, what they are.

69. The third Entomological Research Scheme financed by the Committee is in connection with the Spotted Bollworm at Surat. At one time it was believed that this insect was responsible for the greater part of the early shedding of bolls in that part of the Bombay Presidency. While it is true that a large proportion of the shed material is infested with bollworm larvæ, it has been found that in cotton protected from this bollworm shedding is little, if anything, reduced, so that the insect pest is not the major cause of shedding. There is, however, reason to believe that by introducing changes in the forms of the plant or more generally by causing lateness of crop, Earias Bollworm does cause a definite loss of crop in Gujerat at any rate in certain seasons. The early indications that this pest can be controlled through the medium of parasites have proved illusory, and the study of the life-history of the insect is being continued with a view to designing other control measures. It has been shown that the removal of early damaged material and the use of insecticides are of little practical value as control measures. The information, however, which has been gained of the method of pupation, especially the fact that the pupae normally are found in the soil, mainly in cracks and at no great depth, indicates the possibility of simple control methods. In the course of this work it was found that the *pink* bollworm (Platyedra gossypiella) is present in Surat, as also in Khandesh, in larger numbers than was expected.

70. Cotton wilt investigations have been continued both at Dharwar and at Nagpur. The most that can be said at the present stage is that a good deal of spade work has been done and the ground cleared for further investigations. One method of dealing with this disease, *viz.*, the use of wilt resistant varieties or strains, is already being made use of but this is by no means a final solution

of the problem. At present work is directed to ascertaining th conditions which lead to the disease causing serious loss c crop.

RESEARCH STUDENTS.

71. Seven Research Students were selected in January 1926 an took up their appointment in the following April. A complet list of the Committee's Research Students showing how forme students are now employed and the institutions and various branche of cotton research to which present students have been allotte will be found in Appendix X.

72. Two Senior Research Studentships were awarded during th year for further research work. In all four students have no obtained employment under Provincial Agricultural Department in connection with the Committee's research schemes and one in th Committee's Technological Laboratory. Similar posts are availabl for seven students during the coming year.

73. The Committee's scheme of research students has bee justified by results; these scholarships have enabled some ver useful research workers to be added to the cadres engaged o the improvement of cotton growing in India. As a result of carefu initial selection actual failures have been relatively few though as would be expected, there is considerable variation in individua calibre.

SECRETARY'S TOURS.

74. Visits were paid to Nasik, Dhulia, Muttra, Lyallpur, Lucknow Indore, Pusa, and Poona, during the year in connection with th work of the Committee.

COLLECTION AND SUPPLY OF INFORMATION.

75. As in past years a note on the recent progress in the introduc tion of improved varieties of cotton was contributed to the Bombay

Cotton Annual published by the East India Cotton Association. The substance of this is reproduced in Appendix XI. The Committee also provides a considerable portion of the general infomation contained in the Bombay Cotton Annual. It is believed that by the Committee's co-operation with the East India Cotton Association in the production of one annual publication containing all important statistical information on cotton production and consumption such information will most easily reach those able to utilise it.

76. The Committee is again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference is made to the scientific work bearing on these subjects, and also for the supply of copies of the Shirley Institute Memoirs.

77. To the Empire Cotton Growing Corporation the Committee is also indebted for the supply to the library and to members of the Committee copies of their own proceedings, of special reports obtained by them on cotton prospects in other parts of the Empire and of their *Review* which is published quarterly. They have also supplied us with a considerable amount of information in regard to special cotton legislation in other countries.

78. The Committee has in addition a large circle of Government Departments and public bodies, interested in cotton, both within and outside the Empire with whom an exchange of publications is made.

PUBLICATIONS.

79. The following bulletins and pamphlets were published during the year:—

1. Some Modern Problems of Scientific Research for the Improvement of Cotton Growing.

2. Results of Spinning Tests on Standard Indian Cottons.

3. Areas under New and Improved Varieties of Cotton.

80. The system of sending to the Agricultural Journal of India abstracts and notes on matters of use to agricultural officers and others engaged on cotton work was continued.

B. C. BURT,

Secretary.

CHAPTER IV.

Annual Report of the Director, Technological Laboratory, 1925-26.

The report is divided into three sections :—

I.—Spinning Laboratory.

II.—Research Laboratory.

III.—General.

I.—SPINNING LABORATORY.

Full advantage has been taken during the past year of the facilities provided by the Spinning Laboratory. A large number of tests has been made for Agricultural Departments and in connection with the tests on standard cottons. It is gratifying to be able to record that correspondence on the subject with the Agricultural Departments shows that they are now making use of the results of the spinning tests in deciding their future policy in seed distribution. Some idea of the work of the Spinning Laboratory during the year under review is conveyed by the fact that in all, 111 samples have

been spun, involving no less than 292 *separate spinnings*. These figures represent practically the maximum capacity of the Spinning Laboratory under present conditions, and show a large increase over those for the first year of the Laboratory's working, *i.e.*, the previous year 1924-25, when the corresponding figures were 54 samples spun, involving 119 separate spinnings.

Tests for Agricultural Departments.—The following is a statement of cottons tested for the various Agricultural Officers :—

(1) Director, Institute of Plant Industry, Indore—Two samples of Malvi cotton.

(2) Director of Agriculture, Punjab—Fourteen samples in connection with the special investigation on the purity of Punjab-Amercian cotton and on the effect of growing such cotton under different conditions.

(3) Deputy Director of Agriculture, Myingyan Circle, Meiktila—Four samples of Burma cottons.

(4) Director of Agriculture, Mysore—One sample of Mysore Selection 69.

(5) Cotton Breeder, South Gujerat, Surat—Six samples, four being new types and two being controls.

(6) Cotton Breeder, North Gujerat—Five samples of Wagad cotton, one being a control, the other four being new types.

(7) Cotton Breeder, Dharwar—Five samples : Dharwar No. 1, Gadag No. 1, Farm Kumpta and two new types.

(8) Deputy Director of Agriculture, Bellary, Madras—Four samples, two being new types, the others being local Mungari and Hagari 25, respectively.

(9) Deputy Director of Agriculture, Guntur, Madras—Three samples of Cocanadas, one being a control and two being new types.

(10) Cotton Specialist, Madras—Three new types of Cambodia cotton.

(11) Cotton Specialist, Madras—Two samples of Uppam cotton and one sample of local Cambodia cotton.

(12) Cotton Specialist, Madras—Two samples of Cambodia cotton, one being a control and the other a new type.

(13) His Majesty's Trade Commissioner, Bombay—One sample of Teheran cotton.

(14) A comparison of Saw-ginned and Roller-ginned cottons has been made for Punjab-American 289F, Wagad, and Cambodia cottons.

Standard Indian Cottons.—The work which was referred to in the last Annual Report relating to the Standard Indian cottons has been completed in the present year and a bulletin dealing fully with the subject has been published. The following cottons were selected in the first instance as standard Indian cottons being those more or less recent Agricultural Department Selections which have for the most part passed into extended cultivation. These are the following:—

	Bombay Cottons.	*Season.*
1.	Dharwar No. 1 (Kumpta)	1923-24, 1924-25.
2.	Gadag No. 1 (Dharwar-American) ..	1923-24, 1924-25.
3.	Surat 1027 A.L.F.	1923-24, 1924-25.
	Punjab Cottons.	
4.	Punjab-American 4F.	.... 1924-25.
5.	Punjab American 285F	1923-24, 1924-25.
6.	Punjab-American 289F	.... 1924-25.
	U. P. Cottons.	
7.	Cawnpore K. 22	.... 1924-25.
8.	Cawnpore-American C.A. 9	.... 1924-25.

9. Bundelkhand J. N. 1 .. .. 1924–25.
10. Aligarh A. 19 .. .. 1924–25.

Madras Cottons.

11. Coimbatore 1 (Co. 1) (Cambodia 295) .. 1923–24, 1924–25.
12. Nandyal (Sircar) 14, (Northerns) .. .. 1923–24, 1924–25.
13. Hagari (Sircar) 25, (Westerns) .. .. 1923–24, 1924–25.
14. Karunganni "c" .. .. 1923–24, 1924–25.

Hyderabad Cotton.

15. Umri Bani .. .. 1924–25.

For purposes of comparison two American Cottons have been introduced into the series; these are:—

16. Mississippi .. .. 1923.
17. Texas .. .. 1923.

It is intended to extend this list as new cottons are introduced; it has, however, already been extended for the 1925-26 season by the introduction of Mollisoni cotton which is the type of Desi cotton distributed by the Agricultural Department in the canal colonies of the Punjab. As explained in the Annual Report for 1924-25, it is intended to repeat the spinning and other tests on the standard cottons year by year. In this way it is expected to obtain information regarding the quality of the cottons, season by season, so that it should prove possible on the one hand to follow the effect of seasonal variations and on the other to decide whether any deterioration of the quality is taking place. These records will, of course, be increasingly valuable as the number of seasons for which they are available increases.

These tests on standard Indian cottons were undertaken with a number of objects in view:—

(1) The primary reason for making these tests was to obtain as full information as possible about the standard Indian cottons,

both as to their fibre characters and their spinning capacities. It may here be remarked that the information which has now been published about these cottons has in fact proved to be of very great interest to the cotton trade in general.

(2) Another important reason for making these tests was the necessity for having a series of standards by which to judge other cottons. This is particularly desirable for new cottons produced by cotton breeders, and as no spinning test standards are generally available, it has been necessary for the Technological Laboratory to prepare its own standards.

(3) Seeing that it is a matter of very considerable importance as to what is the minimum weight of cotton on which a satisfactory spinning test can be carried out, the opportunity was taken in the course of these tests to examine the question.

A full discussion as to the methods of carrying out the spinning tests, and the fibre and yarn tests, with various general remarks upon the results, are included in the bulletin which was published in April 1926, giving the results of spinning tests on the standard Indian cottons. One satisfactory feature of these tests is that it can now be taken as definitely proved that the procedure which has been adopted for testing small samples submitted by cotton breeders, *viz.*, making spinning tests in duplicate on lots weighing only 5 lbs. each, is completely justified for the range of counts possible with Indian cottons, *i.e.*, up to 40's. Hence for the complete examination of a cotton—involving the duplicate spinning tests, the fibre tests, and the grader's valuation—the cotton breeder need only supply in the first place a sample weighing about 12 lbs. of which 10 lbs. is used in the spinning tests. This conclusion, which has been arrived at as a result of investigations on no less than 17 different cottons, is one of the very greatest importance in the work of the Technological Laboratory.

In connection with the spinning tests on these standard cottons certain questions of procedure arose. In particular it was found necessary to arrange the drafts from the card onwards so that the draft required in the ring-frame for yarn of 30's counts was about six, and to obtain other counts from the same rovings merely by changing the draft in the ring-frame. While it was recognised that this expedient might not be entirely satisfactory, it had the practical advantage of saving much time in making changes on the preparatory machinery, with all the additional tests of the wrappings which would have been entailed. The point is now under investigation whether the procedure adopted instead of the use of "balanced-drafts" makes much difference to the results in the range of counts into which the standard cottons were spun, *viz.*, 20's to 40's counts. Whatever may prove to be the results of this investigation, there is of course nothing to prevent any given cotton being spun under the theoretically correct draft conditions for each count separately, should the need at any time arise as may occur when a new strain is submitted by an Agricultural Department for a final test before it makes a final decision about the general distribution of the strain.

Some of the standard cottons gave a high blow-room loss. An investigation has therefore been made to see what additional blow-room treatment is necessary in order to effect any considerable increase in the cleanliness of the yarn made.

In the last Annual Report attention was drawn to the facilities available for obtaining information on two other questions :—

(1) The possible deterioration of cotton on storage;

(2) The effect of the physical conditions—temperature and humidity—under which the spinning tests are carried out.

Some progress has been made during the present year in the elucidation of both of these subjects. In the nature of the case a fairly long period must elapse before any definite conclusions can be arrived at with respect to the first question; it is hoped, however, that it will be possible to complete the investigation of the second question during the coming year.

In the Annual Report for the year 1923-24 it was stated that as a measure of control, both as regards the functioning of the machinery and the personal equation of the Spinning Master, it was planned to keep records as comprehensive as possible for each spinning test. Details were given of the records which it was proposed to keep. Most of these records have in fact been maintained, the only exceptions being those for :—

(1) Moisture content at various stages.

(2) Regularity of material at each stage.

With reference to the determination of moisture content, it may be observed that as a result of the installation of the Carrier Humidifying system the work in the Spinning Laboratory is now carried out under fairly constant physical conditions; in general the temperature is not allowed to fall below 80°F. nor the relative humidity below 60 per cent. This fact has to a large extent removed the necessity for the considerable amount of labour which would be entailed in making these determinations of moisture content.

Other reasons have arisen to render it unnecessary at the present time to make determinations of the regularity of material at each stage. The purpose for which it was intended to introduce these tests was to determine whether any observed irregularity were due to the cotton itself or to the factors of machinery or personnel engaged in its treatment. In the first place it is to be observed that such determinations involve an enormous amount of work in the ordinary routine spinning tests. There is no considerable diffi-

culty in designing the apparatus for these tests—such apparatus has in fact been designed for use in the Research Laboratories of the British Cotton Industry Research Association—but to carry out such determinations in the course of the routine spinning tests would necessitate a considerable amount of work and the employment of additional staff. It would in fact necessitate introducing additional machines in the present sequence of spinning machinery. To do this, however, would mean that the spinning tests would not be carried out under strictly normal conditions. Moreover, quite apart from this, the interference which could be entailed in the regular routine of the spinning tests would cause a longer time to be taken in the spinning test itself and give rise to additional work owing to the increased handling of the cotton which would ensue.

Nevertheless, if the tests for regularity were found to be essential, these difficulties would have to be faced. In the light of the experience which has been gained during the past two years, however, it can now be stated that there is no urgency in this question. It has been found that duplicate tests on any given cotton almost invariably agree very well with one another. The inference is therefore drawn that the factors which are introduced by the machinery and the personnel are practically constant; in other words, the spinning test as at present carried out is a real guide to the quality of the cotton under test. Hence the conclusion can be drawn that there is no immediate need to make tests for regularity at each stage, and that although such tests may ultimately prove to be valuable in exceptional cases there is no present need for them in the routine testing of cottons for Agricultural Departments.

II.—Research Laboratory.

Occupation was taken of the new Research Laboratory at the end of September 1925. Since that date the work to which reference

was made in the Annual Report 1923-24 has been steadily proceeded with. It was explained in that report that, in order to determine the relations existing between the properties of cotton and its spinning value, investigations had been planned for the determination of the measurable properties of the cotton fibre as well as of the yarn. These investigations were to include determinations of :—

(1) Dimensional properties;

(2) Elastic properties;

(3) Electrical and optical properties;

(4) Chemical properties;

(5) Yarn properties.

From the outset work was begun on numbers (1) and (5) above. At the meeting in Bombay of the Indian Science Congress in January 1926 a paper was given on " The Study of the Cotton Fibre." This paper reviewed all the recent work which has been done on the physical and chemical properties of the cotton fibre. The paper was divided into three sections :—

(1) Structure and Composition;

(2) Physical and Chemical Properties;

(3) Practical Aspects.

In the first section a general description was given of the fibre. The second section dealt in some detail with recent work upon those properties of raw cotton which were considered to have important practical aspects, *viz*.—

(1) Length;

(2) Ribbon-width;

(3) Area of Cross-Section;

(4) Wall-thickness;

(5) Weight;

(6) Strength;
(7) Tensile Elasticity;
(8) Surface Friction;
(9) Torsional Elasticity;
(10) Plasticity;
(11) Lustre;
(12) Electrical Conductivity;
(13) Porosity and Permeability;
(14) Physical and Chemical Stability.

Emphasis was laid on the great difficulties which arose in the measuring of these properties owing to the irregularity of the material, thus necessitating the making of a large number of determinations and a statistical treatment in each case. The final section dealt briefly with the general relation of these properties to various practical problems of the cotton industry. It was pointed out that there were considerable difficulties besetting the interpretation of these properties in terms of practical utility, and as an example their relation to the spinning value of a cotton was discussed in some detail.

At the meeting of the Committee in January 1926 a note was presented on "The Research Programme of the Technological Laboratory." This note reviewed critically the work which had been done up to the present time, as detailed in the paper on "The Study of the Cotton Fibre." A number of conclusions were drawn from this review and a research programme submitted. This programme was approved by the Committee and new work was at once started on the elastic and chemical properties of the cotton fibre. At the same time work was continued on the lines previously followed. From the beginning the work in the Research Laboratory has been co-ordinated with that in the Spinning Labo-

ratory. Determinations of staple length and of the distribution staple length in any given sample are invariably carried out every cotton submitted for test. These determinations are mac by means of two instruments known respectively as the Ball Sorter, and Baer Sorter, the results from the two instruments givi mutual checks. Measurements are also made by means of the m croscope of the staple length, the fibre width, and the number a distribution of convolutions. The additional tests of the ra material which have been undertaken comprise the determinati of staple strength and of rigidity, and the making of various ch mical determinations on the different raw cottons. As was stat in the last Annual Report, it is by the accumulation of results measurements of this kind and their subsequent statistical analys that it is hoped to solve the problem as to the relation between t properties of a cotton and its spinning value.

III.—General.

(1) *Buildings and Equipment.*—There have been no notab additions or alterations to the buildings during the past yea Additional equipment has been provided to cope with the expansio of work following on the great demands made on the resources the Technological Laboratory.

The testing equipment now comprises:—

1 Cook's Lap Regularity Tester;
1 Cook's Moscrop Yarn Tester;
3 Goodbrand Single Thread Testers;
1 Goodbrand Lea Tester;
1 Goodbrand Wrap Reel;
1 Goodbrand Wrap Block;
1 Goodbrand Yarn Regularity Examiner;

1 Goodbrand Twist Tester ,
1 Baer Conditioning Oven;
4 Baer Sorters;
3 Ball's Sorters;
1 Ball's Magazine Hair Tester;
1 Barratt Hair Tester;
1 O'Neill Hair Tester;
2 Bunge Microbalances.

(2) *Staff.*—The sanctioned scale of the staff given in the last Annual Report has remained practically unchanged, and has been found sufficient for the present for the work which has been undertaken. One important addition, however, has been the appointment of an Instrument Maker whose services have proved very valuable in many directions.

(3) *Research Students.*—Five Research Students have been accommodated in the Laboratory during the present year for the purpose of training in cotton technology. They have been severally engaged in Cotton Technology, in Fibre Testing for Length-distribution and Strength, and in determining Fibre Rigidity, the Chemical properties and the Microscopical properties of various cottons.

(4) *Indian Science Congress.*—As has been previously mentioned, the Indian Science Congress held its Thirteenth Annual Meeting in Bombay. One day of the Meeting was devoted to the discussion of cotton problems and to a visit to the Technological Laboratory. This visit proved very popular, about 300 members being present, most of whom took considerable interest in the details of the work being carried on.

(5) *Publications.*—Reference has already been made to the Bulletin which was published during the year on the " Results of

Spinning Tests on Standard Indian Cottons." This bulletin has met with a favourable reception and a considerable demand for it has taken place. A pamphlet has also been published showing the results of a comparative test on roller-ginned and saw-ginned Punjab-American 289F cotton. This pamphlet also has excited considerable interest.

As in the previous year a contribution has been made to the Bombay Cotton Annual giving a general discussion of the results obtained during the year.

A. JAMES TURNER,

Director, Technological Laboratory.

APPENDIX I.

(Revenue Department.)

Bombay Castle, *10th August* 1926.

Notification No. 3798/24.—Whereas, owing to the wide extension of the growing of similar high quality of cotton in areas I, II and III of the areas specified in Schedule I to Government Notification in the Revenue Department No. 535-A., dated 18th August 1923, it is no longer necessary to maintain the said areas as separate protected areas for the import of cotton into them by road;

Now, therefore, in exercise of the powers conferred by subsection (1) of section 3 of the Cotton Transport Act, 1923 (III of 1923), the Government of Bombay is hereby pleased to cancel the said notification as far as it prohibits the import of cotton by road from the Olpad-Ankleshwar area, into the South-Surat area and the Surat area described in Schedule I to the said notification; provided that in the event of the cultivators being found to grow cotton of inferior quality hereafter in any of the said areas, this notification will be cancelled.

By order of the Government of Bombay (Transferred Departments).

G. A. THOMAS,
Chief Secretary to Government.

APPENDIX II.

OPINIONS RECEIVED FROM THE BOMBAY MILLOWNERS' ASSOCIATION.

I. "The previous improvement in Comptas has been kept up, but I have not seen any improvement in Westerns. We do not use Surats, Dharwar or Cambodias."

II. "There has been no improvement since last year in Surats. In fact cotton last year was slightly inferior. In Comptas and Dharwar, improvement has been maintained. But the Westerns show no improvement but have gone down in spinning qualities."

III. "We see no improvements in Westerns or Cambodias We agree with the above views on Westerns. We do not use Nor therns or Tinnevellies and are, therefore, unable to express an opinion. Improvements in Comptas and Surats has been main tained."

IV. "The application of the Act relates to the prevention o mixing growths of one district with those of another. In th Compta district we have no complaints though some short stapl has been mixed with longer staple—but all Comptas. In Surats w experience no mixing though the cotton was not so good as th previous season's due to this crop generally being poorer. Cambo dia and Tinnevellys were, in my opinion, a little better than th previous season's."

Westerns.—"I agree with the views expressed in No. II above.

V. "The Transport Act is working efficiently. Compta quality this year is the best we have had for several years. Cambodia and Karunganni styles are better than last year. The quality of Surat styles has been maintained. Westerns are worse than last year due most probably to unfavourable weather conditions."

VI. "I agree with No. V."

APPENDIX III.

FORT ST. GEORGE, *November* 18, 1925.
(G. O. Press No. 1657, Development.)

Notification under Section 3 *of the Cotton Transport Act*, 1923, (*III of* 1923), *as amended by Act No. XXXIV of* 1925.

No. 344.—Whereas it is necessary for the purpose of maintaining the quality and reputation of the cotton grown in the areas in the Madras Presidency mentioned in Schedule I hereto appended.

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 3 of the Cotton Transport Act, 1923 (III of 1923) as amended by Act No. XXXIV of 1925, the Government of Madras are hereby pleased to prohibit the import of cotton into the said areas by rail and sea save under and in accordance with the conditions of a license prescribed in this behalf subject, however, to the exception specified in clause (3) below.

(2) The Government of Madras are further pleased to prohibit, under *sub-section (2) of section 3 of the said Act*, the delivery to, and the taking of delivery by, any person, at any railway station situated in any of the protected areas and specified in Schedule II hereto appended, of any cotton when such cotton has been consigned from a railway station not situated in the said area unless such person holds the prescribed license for the import of cotton into the said area, subject, however, to the exception specified in clause (3) below.

(3) The transport of cotton lint into Tiruppur-Cambodia protected area as defined in Schedule I from the districts of North Arcot, South Arcot, Chittor and Chingleput and from the Atur, Dharmapuri, Hosur, Krishnagiri, Omalur, Salem and Uttangarai taluks of Salem district is exempted from the operation of clauses (1) and (2) and permitted without restriction.

SCHEDULE I.—PROTECTED AREAS.

I. *The Northerns and Westerns area*—Consisting of the districts of Anantapur, Bellary, Cuddapah and Kurnool.

II. *The Tiruppur-Cambodia area*—Consisting of the district of Coimbatore, the Karur, Musiri and Kulittalai taluks of Trichinopoly district, the Namakkal, Tiruchengodu and Rasipur taluks of Salem district and that portion of the Madura district lying to the north and west of the Vaigai river.

III. *The Tinnevelly area.*—Consisting of the district of Tinnevelly and that portion of the districts of Ramnad and Madura lying to the east and south of the Vaigai river.

SCHEDULE II.—RAILWAY STATIONS.

I. *The Northerns and Westerns area.*—All stations from Kottur to Hospet, both inclusive, from Rayadrug to Bellary, both inclusive, from Hospet to Guntakal, both inclusive, from Guntakal to Hindupur, both inclusive, from Guntakal to Tungabhadra river, both inclusive, from Dharmavaram to Tanakallu, both inclusive, from Guntakal to Cumbum, both inclusive, on the Guntakal-Bezwada line, from Dhone to Kurnool, both inclusive, and from Guntakal to Settikunta, both inclusive.

II. *The Tiruppur-Cambodia area.*—All stations from Podanur to Kallar, both inclusive, Madukarai and all stations from Podanur to Pollachi, both inclusive, from Podanur to McDonald's Choultry, both inclusive, from Madura bridge to Samudram, both inclusive, and from Erode to Marudur, both inclusive.

III. *The Tinnevelly area.*—All stations from Maniyachi to Madura, both inclusive, from Maniyachi to Tenkasi, both inclusive, from Maniyachi to Tuticorin, both inclusive, from Tinnevelly to Tiruchendur, both inclusive, and from Madura to Mandapam, both inclusive.

APPENDIX IV.

LIST OF PRESS MARKS.

Name of Presidency or Province.	Press Mark.
Madras Presidency	M.
Bombay ,,	B.
Sind ,,	S.
Bengal ,,	L.
United Provinces	U.
Punjab	P.
Central Provinces	C.
Bihar and Orissa	Q
Assam	A.
North-West Frontier Province	F.
Ajmer-Merwara	J.
Delhi	D.

Name of State.	Press Mark.	Name of State.	Press Mark.
Alipura	AP.	Balasinor	[illegible]
Alwar	AL.	Banganapalle	[illegible]
Aundh	AU.	Banswara	[illegible]
Bahawalpur	BH.	*Baroda	[illegible]

[illegible]

Name of State.	Press Mark.
Barwani	BR.
Bharatpur	BT.
Bhavnagar	BN.
Bhopal	BP.
Bilaspur	BL.
Bundi	BU.
Cambay	CA.
Chhota Udaipur	CU.
Cochin	CN.
Cutch	CT.
Datia	DT.
Dewas, J. B.	DJ.
Dewas, S. B.	DS.
Dhar	DR.
Dholpur	DH.
Dhrangadhra	DG.
Faridkot	FK.
Gondal	GN.
Gwalior	GL.
Hyderabad	HD.
Idar	ID.
Indore	HS.
Jaipur	JP.
Jamkhandi	JK.
Jaora	JR.
Jath	JA.
Jetpur	JT.
Jhabua	JH.
Jhalawar	JL.
Jind	JD.
Jodhpur	JO.
Junagad	JN.
Kalsia	KA.
Kapurthala	KP.
Kashmir	KS.
Katosan	KO.
Khairpur	KR.
Khilchipur	KL.
Kishengarh	KG.
Kolhapur	KH.
Kotah	KT.
Limbdi	LM.
Lokhtar	LK.
Malerkotla	MK.
Manawadar	MN.
Marwar	MA.
Mewar	ME.
Miraj, J. B.	MJ.
Miraj, S. B.	MS.
Morvi	MV.
Mudhol	MD.
Mysore	MY.
Nabha	NB.
Narsingarh	NG.
Nawanagar	NA.
Palanpur	PL.
Palitana	PN.
Partabgarh	PG.
Patiala	PT.
Porbandar	PB.
Rajgarh	RG.
Rajpipla	RP.
Rampur	RM.
Rutlam	RL.
Sachin	SA.
Sailana	SL.
Sangli	SN.
Savanur	SV.
Shahpura	SH.
Sitamau	SI.
Tonk	TK.
Vankaner	VK.
Wadhwan	WA.

APPENDIX V.

COTTON FINANCE ENQUIRY.

Summary of the Reports on the Khandesh, Berar and North Gujerat Investigations.

A copy of the questionnaires for the village and market enquiries is given below. The detailed results are too bulky for reproduction but the abstract tables embody much of the information obtained.

Questionnaires.

Village Investigations.

Information to be obtained from each Cotton Grower.

Village.......................

Name of Cotton Cultivator.......................................

Is he a Proprietor or Tenant ?...................................

Total area of his holding...

Area under Cotton..

(Survey numbers).............................

Anticipated yield of *kapas*...

Variety...

1st Period.

Information between.

1. Has any advance been taken for cultivation up-to-date ? .....

....

2. If so, how much ?...

3. What amount has been signed for ?.........................

4. Rate of interest...

5. Source of advance (Co-operative Society, Sowcar, cotton trader) ....

6. Is there any bond to sell *kapas* through the lender, or to the lender ?..

or

7. Is the crop already sold, and the price fixed either on acreage or on weight ?..

If so, to whom ?..

and

for what price ?..

2nd Period.

Information between

1. How much *kapas* has been picked so far—approximately ?....

....

2. Has any advance been taken on this *kapas* ?................

3. If so, from whom ?..

and under what conditions ?........................

....

4. Has any *kapas* been actually sold ?........................

If so, to whom ?..

and where ?..

and when ?..

Was it sold ? through a dalal or arti ?................

5. Has the money been received for this *Kapas* ?................

6. What was the rate ?..

7. What was the money actually received ?................

8. Where was the *kapas* delivered ?........................

How far away ?..

Who paid for cartage ?..

....

3rd Period.

Information between

1. What was the quantity of your whole crop of *kapas* ?
2. How much now remains with you ?
3. Have you received the whole money due on the *kapas* sold ?
4. How many carts were sold locally, and how many were carted to the market and sold there ?

   (If quantities small, state weights).

   If sold in the market, was it sold through a broker ?

   Was the cotton sold outright or deposited with an arti or Bania for sale ?
5. Did you ascertain the market rates before selling ? If so, how ?
6. Has an advance been taken on the *kapas* remaining with you ?
7. If so, from whom and under what conditions ?
8. What rate are you now offered for this *kapas* locally ? (Market rates can be found separately).

General.

(Such information as can be obtained about difficulties in marketing, in finance, and in holding for higher prices).

1. Would an open cotton market with open prices be any advantage to you ? If so, how ?
2. Is there any difficulty in knowing the rate at which your agent sells your *kapas* and in recovering the full money ?
3. Are deductions made from the price ?
4. If so, what are they said to be for—and what rate is said to be charged ?
5. If you take *kapas* to market, and cannot get a good rate for your cotton, what do you do with it ?

General Information to be obtained for each Market.

1. How is the market managed? Attach a copy of any local bye-laws or rules regulating trading in *kapas* or cotton.
2. Is there any local Market Committee of any kind; if so, who are the members? What are their occupations?
3. Describe in detail how sales are conducted.
4. Can cultivators bringing *kapas* to the market sell direct or must they employ brokers?
5. What is the system of buying? Do buyers buy direct or employ brokers?
6. Do brokers and arhatyas act for *both* buyers and sellers?
7. Do buyers give advances against *kapas* deposited for sale; if so, what percentage of the value and at what interest?
8. If daily (or opening) rates are fixed, how is this done, and how are they announced?
9. Are Bombay rates posted in the market regularly? If so, what rates and how obtained?
10. Are there any arrangements for storage in the market? Is *kapas* stored in arti's shops, or godowns, or in ginning factories, *on sellers' account*?
11. Do the market records show daily arrivals? Compile a statement of daily and monthly arrivals for last season from the records available and of prices for the same dates.
12. State the system of weighment in use. Are there any complaints from cultivators about weighments; if so, what?
13. How is the weighman paid and how much? By whom is he employed?
14. What are the allowances and deductions customary in the market? Is there any complaint from sellers that these are unfair?

1. KHANDESH INVESTIGATIONS.

(a) Village Enquiry—West Khandesh.

Ten villages were selected for these enquiries, six in West Khandesh and four in East Khandesh. Detailed replies were received from 813 cultivators out of a total of 851. A few replies were incomplete, but most of the 38 cultivators from whom complete replies were not received were either absent or have grown no cotton.

For West Khandesh the following general conclusions are possible :—

The periods for recording information were modified as follows:—

First period	.. ..	September 24th to October 14th.
Second period	.. ..	October 20th to November 6th. (For West Khandesh only).
Third period	.. ..	January 21st to February 20th.

The last change has proved a mistake as, for various reasons which will be discussed later, a good deal of the cotton was sold between the beginning of December and the middle of January. In any future enquiry probably it would be desirable that the village observations should be more continuous.

(i) *Method of sale.*

A few of the larger growers have had their *kapas* ginned and have sold ginned cotton and state that this is the most profitable method of sale. A considerable proportion of cultivators in some villages have sold their *kapas* in established markets such as Dhulia and Nandurbar and, as will be seen from the market results, the sales by cultivators in such markets from an appreciable percentage of the whole. In all villages a good deal of the *kapas*, and in some practically all has been sold locally either to village traders or to traders from adjoining villages who visited the villages from time to time for the purchase of *kapas*. Such peripatetic buyers in some cases re-sold the *kapas* in the larger markets, in other cases to ginners. On the question as to whether open markets are an advantage the opinions of cultivators naturally differ. Many are in favour of them as they say that weighments are more accurate, the real prices are obtained and money is paid the same day which is not the case

when kapas is sold in villages. The objections to the larger markets are :—

(*a*) The cost of cartage—this is not mentioned by many.

(*b*) The kapas weighs less at the market than in the villages by a few seers per cart. On this point the market enquiries have shown that at Dhulia the last bundle of kapas (less than ½ maund) is never weighed accurately and is not paid for in full. At Amalner a fixed deduction of 5 seers per cart is made.

(*c*) The principal complaint is that the cultivator does not, as a rule, get the rate which is settled in the market but, after weighing has commenced at the ginning factory, a dispute arises about quality and a reduction in the rate is frequently made. These "Vandas" are strongly objected to by a number of cultivators. The recorded reductions range from 4 annas to Rs. 3 per maund. Some are doubtless justified owing to moisture, low ginning percentage or black leaf, but the frequency of small reductions indicate that there is real ground for complaint.

(*ii*) *Finance.*

In villages where there are co-operative societies it is probable that much better records of cultivator's loans have been obtained. The advances are not heavy but are very substantial. Some cultivators complain that the societies do not advance sufficient money and it will be observed that a number of members of the co-operative societies have also borrowed from sowkars. It is difficult to deal with this point in any abstract, but the examination of the detailed figures shows that, on the whole, co-operative societies have advanced reasonably large amounts.

(*iii*) *Cultivator's borrowings.*

The summaries give a good deal of information as to the extent of the borrowings. No attempt at a general enquiry into agricultural indebtedness was made. Where there is no co-operative society the interest on cash loans varied from 18 to 24 per cent. A very large number of cultivators have taken cotton seed on credit in amounts which suggest that a portion of it was required for cattle. The rates charged represent high rates of interest (60 per cent. nearly).

Advances recorded in the second period, (*i e*, advances taken subsequent to cultivation advances) are very small, both in number and the amount Very few instances of actual advances against kapas are recorded No instances of the sale of the crop before it is ready have been recorded The money lenders are not purchasers of kapas to any considerable extent There is no indication that the cultivators have been hampered by indebtedness in disposing of their kapas to the best advantage Some replies state that cultivators could not hold their kapas after the end of December or the middle of January There are not many such replies and such as there are are discounted by the fact that the other replies state that kapas was sold either because rates had fallen or because the end of the season was approaching

(*iv*) *Sales*

The percentage of kapas sold in the second period to kapas picked up to that date is on the whole surprisingly small and the number of cultivators who held up the whole of their kapas until December or January is surprisingly large Those who sold their kapas promptly this year clearly obtained much better rates than those who accumulated the whole of their cotton and sold it later It is significant that the village which shows the highest percentage of kapas sold during the early period is also the village which sold most kapas in the market (Dhulia) One thing at any rate is clear Cultivators on the whole were of opinion that they would get better prices by holding their kapas and the large majority did hold either the whole or a substantial percentage of their crop A number of sales of the cultivator's whole crop are recorded as late as the end of January or the beginning of February Hence the assumption appears to be justified that there is no pressure to sell owing to lack of finance No facilities exist for cultivators taking advances against kapas deposited for sale and there does not seem any indication that they are wanted What does seem to be needed is some elementary regulation of the larger markets

Even under [illegible] the markets are on the whole [illegible] villages even allowing for the [illegible] comparison has not been possible because the actual dates of sale had not been recorded in a sufficient number of cases But the general conclusion

is that there is a clear indication that cultivators who have sold their kapas in the larger markets have obtained better rates.

General Conclusions.

For West Khandesh the following general conclusions seem to be justified :—

(1) A large number of cultivators have kept *all* their kapas unsold from the end of October until various dates in December and January. Of the remainder a number sold a certain proportion earlier and benefited by doing so. Comparatively few sold at the first opportunity.

(2) Such information as has been collected indicates that indebtedness, on the whole, is moderate. There is no indication that the cultivator's freedom in selling his kapas has been restricted by indebtedness.

(3) The borrowings after the cultivation periods are small. There is clearly no pressure to sell.

(4) There seems to be little demand for facilities for depositing kapas against advances.

(5) It would seem from the evidence before us that regulated markets would assist the cultivator to get a better price for his kapas. Many cultivators object to take advantage of the present markets because they state that vandhas or disputes prevent them from getting a fair price.

Village Enquiry—East Khandesh.

Four villages from East Khandesh were selected and the records of two of these, both very large villages, have been gone through in detail with the investigator. The periods of enquiry were as follows :—

—	Mamurabad.	Kandari.	Tamaswadi and Devgaon.
1st Period ..	September 30th to October 8th.	September 24th to 28th.	September 19th to October 7th.
2nd Period ..	October 30th to November 5th.	November 12th to 14th.	October 25th to November 25th.
3rd Period ..	February 8th to 20th and March 4th.	January 5th to 8th and February 28th.	January 20th to February 15th.

I. Method of Marketing.

Twenty-six cultivators had their cotton ginned and sold li of whom twenty were from one village. Sales in markets are mu less common than in West Khandesh, most of the sales being ma locally to travelling traders. Three villages disposed of all the kapas in this manner; in the fourth village only 20 cultivators o of 180 sold *kapas* in the market and 20 sold ginned cotton.

As might be expected there are far fewer replies about t advantages or otherwise of open markets. In the one village th had some experience of markets 37 replies were in favour of op markets owing to the greater competition; 11 recorded deductio on "vandhas" varying from two annas to Rs. 1-4 per maun 4 had no trouble. Thirteen stated that if the *kapas* rate in t market was unfavourable they got their kapas ginned and stor their cotton—one did so. There seem to be no complaints abo village weighments but in many cases there was *great* delay—var ing from 2 weeks to 2 months—in payments.

Borrowings.

The cultivator's borrowings during the cultivation period a very similar to those in West Khandesh but are somewhat heavie As in West Khandesh borrowings recorded during the 2nd perio *i.e.*, after picking had begun were quite nominal. There were n borrowings against kapas deposited. Again there are no indicatio that the cultivators were tied to the money lenders or hampered b their borrowings in disposing of their kapas to advantage.

An additional summary for Mamurabad village has been pre pared showing the amounts which some tenants are paying for rent ed land. Most of them are also proprietors of part of the land the cultivate. The rents are very heavy (Rs. 20 to Rs. 35 per acre compared to the assessment (Rs. 4 to Rs. 5) and probably only a ma who owns part of his land could afford to pay them. In this villag rents are paid for the year *in advance*, a fact which explains som of the heavy borrowings.

Sales.

In the two large villages Mamurabad and Kandari three distinct sale periods can be observed. The early sales, *i.e.*, before November 5th were trivial although half the crop had been picked.

In the next period ending about November 25th, 47 out of 170 cultivators in Mamurabad and 79 out of 93 in Kandari sold all or most of their kapas, the percentage of the total crop so sold in the 2 villages being 34 and 79. At the next period, January 6th to 15th, 114 cultivators in Mamurabad and 14 in Kandari sold all their crop.

In Tamaswadi and Devgaon also first period sales were nominal and in the latter village most of the kapas was sold about January.

The cultivators' replies show that they can and did hold up their kapas until January in the hope of getting better prices; this is 3 months after harvest. There is clearly little pressure to sell.

Sales of the standing crop in advance are again nil. A few very small "Jalap" sales of trifling quantities are recorded. These seem to be more a matter of custom than of money.

No detailed comparison is possible of the rates obtained from village sales and sales in the market but the indications are that in the case of Tamaswadi and Kandari the rates obtained in the villages compared pretty well with market rates. For Devgaon we have a fairly good comparison with Dhulia market rates. The rates at Dhulia were Rs. 21-4 to Rs. 21-8 per maund, whilst 16 per cent. of the Devgaon cultivators got Rs. 20 to Rs. 21 locally and 45 per cent. Rs. 19 to Rs. 20, *i.e.*, Re. 1 to Rs. 2 down. Mamurabad cultivators got about one rupee below Jalgaon market rates for November-December sales; for December–January sales they got market prices for Red Leaf cotton but were heavily penalised (Rs. 2 to Rs. 3 per maund of *kapas*) for black leaf kapas.

Generally speaking the East Khandesh results confirm the conclusions provisionally adopted for West Khandesh.

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

WEST KHANDESH.

P = Proprietor T = Tenants, including those cultivating partly as tenants and partly as proprietors

Number of cultivators in each group

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Gorana	P	10	2	2	6 (a)	2	7	2	4	3 (b)	33
	T	0	0	0	3	2	2	5	1	5 (c)	18
	Total	10	2	2	9	4	9	7	5	8	56

REMARKS —(a) One had further unascertained borrowings for household purposes
(b) Rs 81 Rs 62 and Rs 50 respectively
(c) Rs 140 Rs 83 Rs 55 Rs 50 and Rs 47 respectively

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Varpada	P	4	1	3	3	5	3	1	1	4	25
	T	0	0	2	4	0	3	1	0	0	10
	Total	4	1	5	7	5	6	2	1	4(a)	35

REMARKS —(a) Rs 111 Rs 49 Rs 46 and Rs 46 per acre respectively

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Ajanda Bk	P	7	0	0	3	4	4	4	8	8 (a)	38
	T	2	0	0	1	2	4	3	1	3 (b)	16
	Total	9	0	0	4	6	8	7	9	11	54

REMARKS —(a) Rs 89 Rs 82 Rs 58, Rs 57 Rs 51 Rs 50 Rs 50 and Rs 50 per acre respectively
(b) Rs 66 Rs 53, and Rs 48 per acre respectively

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Sonshelu.	P	1	15	8	2	1	1	1	0 (a)	0	29
	T	0	7	1	1	0	0	0		0	9
	Total	1	22	9	3	1	1	1	0	0	38

REMARKS —(a) No borrowings above Rs 30 per acre most of the 22 small borrowings are for seed on credit

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Vaghoda.	P	3	1	2	2	6	6	2	2	2 (a)	26
	T	3	0	2	2	0	2	1	0	0	10
	Total	6	1	4	4	6	8	3	2	2	36

REMARKS.—(a) Rs 53 and Rs 52 per acre respectively

Advances Rs per acre		No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Pimprad	P	6	7	6	8	7	1	0	2	0	37
	T	1	5	6	1	0	0	0	0	0	13
	Total	7	12	12	9	7	1	0	2	0	50
West Khandesh. All cultivators	P	31	26	21	24	25	22	10	17	17	193
	T	6	12	11	12	4	11	10	2	8	70
	Total	37	38	32	36	29	33	20	19	25	263
Percentage		14	15	12	13	11	12	7	7	9	

Advances expressed as a percentage of the money realized from the sale of cotton.

WEST KHANDESH.

Percentages.		Number of cultivators in each group.									REMARKS.
		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150%	151–200%	Over 200%		
Gorana.	P. ..	10	3	4	10	6	4	0	1(*a*)	38	(*a*) 357%
	T. ..	0	0	4	5	3	6	0	0	18	
	Total ..	10	3	8	15	9	10	0	1	56	
Varpada	..P. ..	4	4	8	7	0	1	0	1(*a*)	25	(*a*) 215%
	T. ..	0	4	4	1	1	0	0	0	10	
	Total ..	4	8	12	8	1	1	0	1	35	
Ajanda Bk.	P. ..	7	0	8	7	8	6	1	1(*a*)	38	(*a*) 241%
	T. ..	2	0	3	5	4	2	0	0	16	
	Total ..	9	0	11	12	12	8	1	1	54	
Sonshelu.	P. ..	3	20	5	1	0	0	0	0	29	
	T. ..	0	7	1	0	1	0	0	0	9	
	Total ..	3	27	6	1	1	0	0	0	38	
Vaghoda.	P. ..	3	2	8	3	2	6	1	1	26	
	T. ..	3	0	2	3	2	0	0	0	10	
	Total ..	6	2	10	6	4	6	1	1	36	
Pimprad.	P. ..	7	11	11	5	2	1	0	0	37	
	T. ..	1	9	3	0	0	0	0	0	13	
	Total ..	8	20	14	5	2	1	0	0	50	
West Khandesh. All cultivators.	P. ..	34	40	44	33	18	18	2	4	193	
	T. ..	6	20	17	14	11	8	0	0	76	
	Total ..	40	60	61	47	29	26	2	4	269	
Percentage		15	22	23	17	11	9	1	2		

P.=Proprietor. T.=Tenants, including those cultivating both as proprietors and tenants.

On all the cultivators in the six villages.

37% had borrowed less than 25% of the value of the crop.

60% „ „ „ „ 50% „ „ „ „

23% „ „ more than 75% „ „ „ „

12% „ „ „ „ 100% „ „ „ „

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

EAST KHANDESH.

P = Proprietor

T = Tenants including those cultivating partly as tenants and partly as proprietors

Number of cultivators in each group

Advances Rs per acre	No ad vance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of culti vators
Mamurabad P	49	0	2	4	4	3	3	5	9 (a)	79
T	38	1	3	12	8	8	5	14	13 (b)	102
Total	87	1	5	16	12	11	8	19	22	181

Advances expressed as a percentage of the money *realized from the sale of cotton.*

EAST KHANDESH.

P = Proprietor

T = Tenants including those cultivating both as proprietors and tenants

Number of Cultivators in each group

Percentages	0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %	Number of cultivators
Mamurabad P. ..	49	6	6	3	5	5	1	4	79
T.	38	7	15	10	8	12	7	5	102
Total .	87	13	21	13	13	17	8	9	181

REMARKS—(a) Rs. 75, Rs. 50, Rs 100 Rs 67, Rs 50 Rs. 80, Rs 52, Rs 106 and Rs. 106 per acre respectively

(b) Rs 64, Rs 44, Rs 53, Rs 44, Rs 51, Rs. 50 Rs 66, Rs 73, Rs 57, Rs 3[illegible]5 Rs 76, Rs. 52, Rs 74 per acre respectively

(c) Two circumstances affect the borrowings in this village —

(1) The rents recorded for leased land are high and these are paid in advance

(2) The area under groundnuts is approximately half the cotton area and hence the recorded advances really relate to two cash crops instead of one

(d) The number of cultivators (87 out of 181) who have borrowed nothing is very high

Advances expressed as a percentage of the money realized from the sale of cotton.

West Khandesh.

Number of cultivators in each group.

Percentages.		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150%	151–200%	Over 200%		Remarks.
Gorana.	P. ..	10	3	4	10	6	4	0	1(a)	38	(a) 357%
	T. ..	0	0	4	5	3	6	0	0	18	
	Total ..	10	3	8	15	9	10	0	1	56	
Varpada	P. ..	4	4	8	7	0	1	0	1(a)	25	(a) 215%
	T. ..	0	4	4	1	1	0	0	0	10	
	Total ..	4	8	12	8	1	1	0	1	35	
Ajanda Bk.	P. ..	7	0	8	7	8	6	1	1(a)	38	(a) 241%
	T. ..	2	0	3	5	4	2	0	0	16	
	Total ..	9	0	11	12	12	8	1	1	54	
Sonshelu.	P. ..	3	20	5	1	0	0	0	0	29	
	T. ..	0	7	1	0	1	0	0	0	9	
	Total ..	3	27	6	1	1	0	0	0	38	
Vaghoda.	P. ..	3	2	8	3	2	6	1	1	26	
	T. ..	3	0	2	3	2	0	0	0	10	
	Total ..	6	2	10	6	4	6	1	1	36	
Pimprad.	P. ..	7	11	11	5	2	1	0	0	37	
	T. ..	1	9	3	0	0	0	0	0	13	
	Total ..	8	20	14	5	2	1	0	0	50	
West Khandesh.	P. ..	34	40	44	33	18	18	2	4	193	
All cultivators.	T. ..	6	20	17	14	11	8	0	0	76	
	Total ..	40	60	61	47	29	26	2	4	269	
Percentage		15	22	23	17	11	9	1	2		

P.=Proprietor. T.=Tenants, including those cultivating both as proprietors and tenants.

On all the cultivators in the six villages.

37% had borrowed less than 25% of the value of the crop.

60% ,, ,, ,, ,, 50% ,, ,, ,, ,,

23% ,, ,, more than 75% ,, ,, ,, ,,

12% ,, ,, ,, ,, 100% ,, ,, ,, ,,

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P = Proprietor

T = Tenants including those cultivating partly as tenants and partly as proprietors

Number of cultivators in each group

Advances Rs per acre	No advance	Rs 1–5	Rs 6–10	Rs 11–15	Rs 16–20	Rs 21–25	Rs 26–30	Rs 31–40	Over Rs 40	Number of cultivators
Mamurabad P	49	0	2	4	4	3	3	5	9 (a)	[illegible]
T	38	1	3	12	8	8	5	14	13 (b)	[illegible]
Total	87	1	5	16	12	11	8	19	22	[illegible]

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P = Proprietor

T = Tenants including those cultivating both as proprietors and tenants.

Number of Cultivators in each group

Percentages	0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	[illegible]	[illegible]	[illegible]
Mamurabad P.	49	6	6	3	5	[illegible]	[illegible]	—	—
T.	38	7	15	10	[illegible]	[illegible]	—		—
Total	87	13	21	13	13	[illegible]			—

REMARKS.—(a) Rs. 75, Rs. 50, Rs 100, Rs. 67, Rs 50, Rs. 90 [illegible]

(b) Rs 64, Rs 44, Rs 53, Rs. 44, Rs 51, Rs. 50 [illegible] Rs 74 per acre respectively

(c) Two circumstances affect the borrowings in this village —

(1) The rents recorded for leased land are [illegible]

(2) The area under groundnuts is [illegible] advances really relate to [illegible]

(d) The number of cultivators [illegible]

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P. = Proprietor.

T. = Tenants including those cultivating partly as tenants and partly as proprietors.

Number of Cultivators in each group.

Advances Rs. per acre.	No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Kandari. P.	10	0	3	4	5	10	6	7	5	50
T.	5	4	2	5	8	4	7	8	2	45
Total ..	15	4	5	9	13	14	13	15	7	95

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P. = Proprietor.

T. = Tenants including those cultivating both as proprietors and tenants.

Number of Cultivators in each group.

Percentage.	0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %	Number of cultivators.
Kandari. P.	10	0	3	8	12	8	4	5	50
T.	5	2	5	7	7	8	5	6	45
Total ..	15	2	8	15	19	16	9	11	95

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P = Proprietor

T = Tenants including those cultivating partly as tenants and partly as proprietors

Number of cultivators in each group

Advances Rs per acre		No advance	Rs 1-5	Rs 6-10	Rs 11-15	Rs 16-20	Rs 21-25	Rs 26-30	Rs 31-40	Over Rs 40	Number of cultivators
Tamaswadi	P	23	4	10	12	17	16	14	29	28 (a)	153
	T	2	2	2	3	1	4	1	3	7 (b)	25
	Total	25	6	12	15	18	20	15	32	35	178

Remarks—(a) Rs 67, Rs 48, Rs 89, Rs 55, Rs 57, Rs 53, Rs 72 Rs 67, Rs 50, Rs 80, Rs 80, Rs 44, Rs 44, Rs 66, Rs 92 Rs 67, Rs 66, Rs 50, Rs 133, Rs 58 Rs 44, Rs 133, Rs 63, Rs 113, Rs 67, Rs 50, Rs 47 and Rs 114 per acre respectively

(b) Rs 83, Rs 47, Rs 93, Rs 59 Rs 133, Rs 50 Rs 54 per acre respectively

There is a considerable area of groundnuts in this village, indeed some cultivators grew no cotton This doubtless explains a number of the larger loans

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P = Proprietor

T = Tenants including those cultivating both as proprietors and tenants

Number of cultivators in each group

Percentage		0	1-25 %	26-50 %	51-75 %	76-100 %	101-150 %	151-200 %	Over 200 %	Number of cultivators
Tamaswadi	P.	23	8	13	17	17	34	11	30	153
	T.	2	1	0	3	2	4	8	5	25
	Total	25	9	13	20	19	38	19	35	178

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

EAST KHANDESH.

P.=Proprietor.

T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre.		No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Devgaon.	P.	12	6	1	8	5	10	4	12	23 (*a*)	81
	T.	2	0	0	1	1	2	1	1	8 (*b*)	16
	Total ..	14	6	1	9	6	12	5	13	31	97

REMARKS.—(*a*) Rs. 64, Rs. 72, Rs. 74, Rs. 51, Rs. 43, Rs. 82, Rs. 53, Rs. 91, Rs. 92, Rs. 97, Rs. 75, Rs. 58, Rs. 49, Rs. 50, Rs. 53, Rs. 46, Rs. 47, Rs. 46, Rs. 51, Rs. 44, Rs. 48, Rs. 50 and Rs. 48 per acre respectively.

(*b*) Rs. 60, Rs. 40, Rs. 56, Rs. 55, Rs. 101, Rs. 75, Rs. 63 and Rs. 68 per acre respectively.

Advances expressed as a percentage of the money realized from the sale of cotton.

EAST KHANDESH.

P.=Proprietor.

T.=Tenants including those cultivating both as proprietors and tenants.

Number of cultivators in each group.

Percentage.		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %.	Number of cultivators.
Devgaon.	P.	12	3	8	7	11	10	10	20	81
	T.	2	0	0	1	2	3	2	6	16
	Total ..	14	3	8	8	13	13	12	26	97

CONSOLIDATED STATEMENT.

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P = Proprietor
T = Tenants including those cultivating partly as tenants and partly as proprietors

Number of cultivators in each group

Advances Rs per acre		No advance	Rs 1 5	Rs 6-10	Rs 11 15	Rs 16 20	Rs 21 25	Rs 26 30	Rs 31 40	Over Rs 40	Number of cultivators
Mamurabad	P	49	0	2	4	4	3	3	5	9	79
	T	38	1	3	12	8	8	5	14	13	102
	Total	87	1	5	16	12	11	8	19	22	181
Kandari	P	10	0	3	4	5	10	6	7	5	50
	T	5	4	2	5	8	4	7	8	2	45
	Total	15	4	5	9	13	14	13	15	7	95
Tamaswadi	P	23	4	10	12	17	16	14	29	28	153
	T	2	2	2	3	1	4	1	3	7	25
	Total	25	6	12	15	18	20	15	32	35	178
Devgaon	P	12	6	1	8	5	10	4	12	23	81
	T	2	0	0	1	1	2	1	1	8	16
	Total	14	6	1	9	6	12	5	13	31	97
Grand Total		141	17	23	49	49	57	41	79	95	551
Percentage		26	3	4	9	9	10	7½	14½	17	100

It will be seen that cultivators' recorded borrowings *per acre of cotton* are higher in East Khandesh than in West Khandesh. The percentage of cultivators who have taken no advances is higher in East Khandesh than the percentage of cultivators who have not borrowed more than Rs. 5 per acre so that the difference is not significant and it could be accounted for by incomplete information as to seed obtained on credit. The higher percentage of cultivators in East Khandesh who have taken advances of over Rs. 25 per acre is clearly due to the greater importance of groundnut cultivation in East Khandesh. In West Khandesh the cotton area is 52·8 per cent. of the whole cultivated area in the villages studied; for the East Khandesh villages the percentage is only 45.

(*b*) *Market Enquiry Summary.* *

The village summaries deal with the number of cultivators from the villages studied who used the larger markets. The only markets† that need be discussed are the 9 referred to in the summary. Many other places were found not to be *Kapas* markets but places with ginning factories where ginned cotton is sold by traders.

2. It will be seen from the summary that the proportion of carts brought in by cultivators is large. In the case of Dhulia the number of carts arriving was far larger than could be dealt with by the investigators and they obtained records for 50 carts each day. Assuming that the 300 carts recorded were fairly representative (the system adopted makes it probable that they were), cultivators brought 61 per cent., traders 39 per cent. In the Amalner market also the number of carts was too large for a complete record, cultivators' carts here represent 27 per cent. and traders' 73 per cent. In the other markets every cart appears to have been recorded. At Dondaiche (3 days) 63 out of 74 carts were brought by *cultivators*, 85 per cent. At Sherpur 61 carts out of 73 (84 per cent.) were brought by cultivators. At Nandurbar 22 out of 53 (44 per cent.) were cultivators' carts and at Pachora 27 out of 36 (75 per cent.). At Jalgaon on the other hand only 6 carts out of 49 (12 per cent.) belonged to growers, the remainder being brought by merchants. For Maheji no conclusion can be drawn as only 5 carts were recorded.

3. The answers to the general information questions for these markets are summarised below. They are all very similar. There are no market committees and no bye-laws or rules. At Jalgaon the municipality has provided (free) an open space which serves as a cotton market. At Amalner the municipality has provided an open space and a small building and charges 2 annas per cart. At Maheji and Pachora there is no semblance of a market yard, all transactions seem to take place at ginning factories. At Pachora however a Co-operative Sale Society, which is practically a co-operative commission shop employing one Adhatya to deal with members' produce, deals with about 4,000 carts per annum. At Sherpur there is an association of *traders* who adjudicate on disputes (Vandas).

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* For questionnaire see page 67.

† Shahada is mentioned in the investigator's report as mainly a lint market but the detailed replies indicate that it is also a *Kapas* market earlier in the season.

Q. 3.—The system of sales everywhere is much the same. Carts collect in the early morning, dalals show samples to merchants, bids are made under cover and the seller accepts a rate. *No memorandum is given to the seller at this stage.* The carts are then removed to the various ginning factories where weighment takes place and often the real bargaining. Here a memorandum of the weight and rate is given on which the cultivator is paid. Allowances are frequently claimed on the grounds that the cotton is not up to sample, or is damp, or has a low ginning percentage. Such claims are made *after weighment has begun* and usually the cultivator has no option but to accept the new rate. The records of such allowances is imperfect as, in many cases, only the final rate has been recorded. Nevertheless the number of cases of reductions of annas 4 to 8 per maund (say 1 to 2½ per cent.) are so large that it seems clear that the buyer generally squeezes some allowance out of the cultivator. There are also some instances of much bigger deductions as much as Rs. 3 per maund (8 per cent.).

This is the principal complaint of the cultivators against the present markets. It can only be remedied by the constitution of market committees and the introduction of definite market rules. Payments appear to be promptly made ; this is substantiated by the individual village replies.

Q. 4.—Sellers in all of these markets except Maheji must employ a broker : they cannot sell direct. At Maheji the gin owners are said to act for the seller.

Q. 5.—In Dhulia, Nandurbar and Amalner Indian firms buy direct : foreign firms employ Adhatyas. Buyers' brokers are not required at Pachora, but the only Kapas transactions at Pachora are those made through the co-operative society, otherwise Pachora is a ginned cotton market. In the other markets buyers employ brokers ; at Shahada buyers have their own brokers *but* do not pay commission on Kapas purchases.

Q. 6.—Yes, at Jalgaon, Dondaiche and Sherpur brokers act for both buyer and seller : at the other markets for seller only.

Q. 7.—Dondaiche, Sherpur and [illegible]
At Shahada ginners advance 50-75 p [illegible]
for ginning. Interest 7½ per cent. [illegible]

gin-owners advance money on Kapas deposited in the ginning factory up to 50-75 per cent. of its value charging interest at 6 to 12 per cent. according to the standing of the borrower. At Dhulia and Amalner Adhatyas advance up to 75 per cent. against Kapas delivered to ginning factories. Interest 9 to 12 per cent. At Amalner and in East Khandesh generally ginners finance traders in order to attract business. Ginners at Dhulia are buyers but do not make advances. At none of these markets are advances made to cultivators against Kapas deposited for sale.

Q. 8.—Buyers calculate the rates from Bombay telegraphed prices. No system of posting rates in the markets. In all cases *the cultivator is dependent on buyers or dalals for information* about rates.

Q. 9.—Bombay rates are not posted in any of the markets.

Q. 10.—There is no provision for storage at any of the markets. At Dhulia and Nandurbar merchants and dealers can get godown accommodation in the ginning factories and it is reported that factories are increasing their storage accommodation. At other centres the only storage is in the open in ginning factory compounds. At Amalner and Jalgaon limited godown accommodation in ginning factories has been provided recently but is still insufficient.

Q. 11.—At none of the markets are any proper records of arrivals and prices maintained. The approximate arrivals are reported to be as follows :—

Dhulia	70,000–90,000 bales serves a radius of 50–60 miles.
Nandurbar ..	15,000–19,000 bales (two-thirds Khandesh, one-third Broach).
Shahada	5,000–7,000 bales.
Sherpur	20,000–25,000 ,,
Dondaiche ..	5,000–7,000 ,,
Pachora	No record except for Co-operative Society (4,000 carts, say 2,500 bales).
Amalner ..	40,000 bales in a good season.
Jalgaon	20,000–25,000 bales.
Maheji	20,000 bales in a good year ; this year 7,000 bales.

Q. 12.—Weighments in the West Khandesh markets are made in the ginning factories. Avery Beam balances in half maund lots. On the whole there is little complaint about weighments except that the last bundle (less than ½ maund) is not actually weighed and a deduction is made—especially at Dhulia. At Amalner the buyer takes a fixed allowance of 5 seers per cart. In the East Khandesh markets Amalner, Pachora, Jalgaon and Maheji weighments are made on platform balances and there are some complaints that cultivators distrust these. The detailed replies show that in many cases the market weights tallied quite well with the village rates, in other cases they were a few seers lower. Many cultivators consider that they lose from 2 to 8 seers per cart as a rule, others hold that market weights are better. Cultivators complain of weighments at Nandurbar and of the late time (5 p.m.) at which they are commenced. At all other markets cultivators are said to get their money the same evening without difficulty.

Q. 13.—*Weighment.*—

Dhulia	Employed by broker or Adhatya on behalf of *seller*; weighing charges, Re. 1 per Candy of 20 maunds, included in broker's charges.
Nandurbar ..	Separate weighment paid by *buyer* at annas 10 per Candy.
Sherpur	Paid (yearly) servants of broker or Adhatya. Weighing charges included in brokerage charges.
Shahada	Engaged by both seller and buyer and paid annas 4 per cart by seller and annas 12 per Candy by buyer.
Dondaiche ..	Not ascertained.
Pachora	The Co-operative Society employs a permanent weighman.
Amalner .. .. & *Jalgaon*	Employee of the broker or Adhatya.
Maheji	Weighman is the servant of the gin-owner.

Q. 14.—*Allowances and Deductions.*

Dhulia .. .. Rs. 2 per cart of 10 maunds (or Rs. 1-8-0 for 6 maunds) made up as folows :—

	Re.	a.	p.
Weighing	0	8	0
Hamali	0	3	0
Commission (including charity)	1	5	0

Nandurbar—From seller .. 12½ annas per cart, *viz.*

	Rs.	a.	p.
Commission	0	8	0
Hamali	....		
Dharmao	0	0	6
Pinjrapol	0	1	0

Weighing paid separately (see above, say annas 5 per cart).

From buyer—10 annas per Candy commission, and

5 " " Hamali.

Sherpur—From seller—

	Rs.	a.	p.
Hamali	0	4	0
Pinjrapol	0	2	0

Jokhami & Adhat (including weighing charges) .. .. 0 8 0 to 0 12 0 or Re. 1 per cart.

From buyer—8 annas per Candy.

Shahada .. .. Adhat from Re. 0-12-0 to Re. 1 per 100 rupees (say Rs. 1-8-0 to Rs. 2 per cart).

Dharmao Re. 0-1-3 per cart.

Weighing charges Re. 0-4-0 per cart.

Dondaiche .. Adhat at Re. 0-12-0 per cent. (Rs. 1-8-0 to Rs. 1-14-0 per cart).

Hamali Re. 0-3-0 per cart of 10 maunds.

Pinjrapol Re. 0-1-0 do.

Dharmao Re. 0-0-3 do.

National school Re. 0-0-6 do.

Watering charges Re. 0-1-0 do.

Total, say, Rs. 1-13-9 to Rs. 2-3-9 per cart.

Pachora .. (Co-operative Society)—

Commission Re. 0-2-0 per cart.

Adhat Re 0-8-0 per Rs. 100.

Dharmao Re. 0-0-6 per cart.

The commission includes weighing charges.

Jalgaon .. .. Re. 0-8-0 to Re. 0-9-0 per cart from seller, and

Re. 0-6-0 per cart from purchaser.

Sellers are charged :—

Commission and weighing Re. 0-6-0 per cart of 480 seers.

Dharmao Re. 0-1-0 per cart for 480 seers.

Bhatta Re. 0-0-6 do.

Pinjrapol Re. 0-0-6 do.

Additional Pinjrapol this year Re. 0-1-0 per cart of 480 seers.

Amalner .. Ground rent Re. 0-2-0 per cart.

Brokerage, etc., Rs. 1-8-0 per cart for 432 seers or under.

Rs. 2-0-6 per cart above 432 seers up to 792 seers.

The latter includes :—

	Rs.	a.	p.
Weighing	0	8	0
Hamali	0	2	6
Commission	1	2	6
Pinjrapol	0	2	0
Dharmao	0	1	6

A fixed allowance of 5 seers per cart is also taken by buyers.
Mahcji .. .. 1 anna charity cesses per cart only.

GENERAL.

1. The investigator has also devoted considerable time to an enquiry as to how local prices are calculated from Bombay prices and details of " export charges." It is doubtful if this can profitably be followed up as the most important factor of all-ginning percentage is variable. So long as there is competition amongst buyers, the nominal market rates will probably correspond fairly closely to Bombay rates. I shall go through these details with him later and if any definite conclusions emerge they can be dealt with later.

2. The system of forward "ring" sales by which the seller weighs over his Kapas and nominates some future date for the settlement of the rate has been enquired into and it was found that out of 350 cultivators (3 villages) four only had sold in this way. It is stated that this system has fallen into disfavour since 1920.

3. Sales of ginned cotton by petty dealers who have collected Kapas from villages seem to be considerable.

4. The reasons why all the Co-operative Sale Societies (Co-operative commission shops) except that at Pachora have failed would seem to be worth enquiring into. Even the Pachora Society seems to have handled more carts for petty dealers than for cultivators. The Society has also sold *Kapas* brought in from the Nizam's Dominions. Such commission shops seem to have attracted a certain number of cultivators who have now reverted to village sales because of the disputes over quality in markets like Dhulia. This might be taken up by the Divisional Cotton Committee.

INDIVIDUAL ANSWERS

The proportion of cultivators and traders selling Kapas in each market has already been dealt with It has also been stated that cultivators cannot obtain advances on cotton deposited but that petty traders are financed by ginners and Adhatyas The remaining questions related to —

(1) The rates actually settled and received as compared to the quoted market rate

(2) Deductions and allowances

I have been through the answers very fully with the Chief Investigator and it appears that in very few cases have really complete answers to our questions been obtained The question "how much money have you actually received" has not been answered directly in a single instance so far as I can ascertain Apparently a good deal of opposition was placed in the way of the investigators, obtaining full information

Dhulia Market—The Chief Investigator states that during the first day's investigation the rates settled in the market for over sixty carts were recorded before the carts left the market Then the ginning factories were visited and the rates finally agreed upon recorded and notes made on the weighment Finally the dalals' shops were visited and the details of the actual payments obtained If this procedure could have been continued most useful figures would have been obtained but one of the biggest buyers stopped weighment when the investigators visited the ginning factory so as to prevent them getting details of the "Vandas" Next day the dalals refused to give the rates at which the bargains had been settled and the investigators were only able to get the final rates and hence did not get details of the reductions in rates made during weighment On the first day, October 28th, both rates were recorded for 23 carts of which 22 belonged to cultivators with the following result —

Deductions in annas per maund of 72 seers (150 lbs)

Deductions	..	0	4	8	12	32
Number of carts	..	5	10	5	2	1

The declared market rate was Rs. 24; of the 23 carts, referred to above, the rates *accepted* in the *market* were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	25 12 0	24 8 0	24 0 0	23 12 0
Number of carts	1	6	11	5

The rates actually paid were :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	24 4 0	24 0 0	23 12 0	23 8 0
Number of carts	4	3	8	8

For the remaining 27 carts (20 of which belonged to cultivators) the rates settled in the market were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	24 8 0	24 4 0	24 0 0	23 12 0	23 8 0
Number of carts	2	4	4	8	9

The final rates were not ascertained.

On the second day, October 29th, the rates declared were Rs. 25-4-0 and Rs. 24-4-0. Of the 50 carts recorded, 47 belonged to cultivators. Reductions on dispute of 4 annas per maund were recorded in the case of 5 carts and of 12 annas for 1 cart; for the others only final payment rates were ascertained which were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates (paid)	24 6 0	24 4 0	24 0 0	23 12 0	23 8 0	23 4 0	23 0 0
Number of carts	1	4	14	29	1	0	1

For subsequent dates no information about "Vanda" deductions has been obtained and as the rates varied widely according to the quality of the cotton no deductions can be drawn from them.

In only one case has the cultivator's figure for the lot of the Kapas sold been recorded (his cotton weighed $\frac{1}{2}$ maund less than at the village). Details of the deductions made by the weighmen from the lot of the last bundle were not recorded. A fixed *dalali* of Rs. 2 per cart is recorded throughout.

Amalner —The charges in this market are Rs 2 2 6 per cart Adhat, 2 annas per cart rent (municipality) and an allowance of 5 seers in weight No actual weights are recorded and no record of deductions Apparently the rates settled in the market was not recorded but the rates on which payments were made The following rates are of some interest —

1st Day—December 3rd

Market rate Rs 22 8 0 to Rs 22-12 0 per maund of 72 seers. Of 50 carts 17 were brought by cultivators and 33 by traders

	Rs a p 22 12 0	Rs. a. p 22 8 0
Pates		
Number of carts	20	30

2nd Day—December 4th

Rate Rs 22 0-0 to Rs 22 8 0 (Of 50 carts 16 were brought by cultivators)

	Rs. a. p 22 8 0	Rs. a. p 22 4 0	Rs a p 22 0 0
Rates			
Number of carts	16	20	14

3rd Day—January 20th

Market rate Rs 20 to Rs 21 (Of 50 carts brought were 81 by cultivators)

	Rs. a. p 21 0 0	*Rs.* a. p. 20 12 0	*Rs.* a. p 20 8 0	*Rs.* a. p 20 4 0	*Rs.* a p 20 0 0
Rates					
Number of carts	2	2	13	17	16

Other dates show a similar range

Jalgaon —Commission of 8 annas (now 9 annas) per cart is recorded throughout No records of weights or of the rates settled in the market The individual replies show nothing of interest

Sherpur —The replies from this market are of more interest as in 25 cases (16 cultivators and 9 traders) the weight of cotton was known by the seller and could be compared with the market rate In only three cases do the weights tally exactly, but the discrepancy in the other cases is sometimes plus and sometimes minus and is clearly

due to the fact that the 'home' weights were based on a different maund. In this market weights were taken to fractions of a seer.

Another interesting fact is that some cultivators are charged Re. 1 per cent. Adhat and some annas 12 per cent. while traders only pay 8 annas Adhat per cart. Hamali and Dharmao at 4 and 2 annas per cart respectively are the same for all.

One dispute over quality is recorded resulting in deduction of 2 annas per maund. The prices vary considerably but considering the dates this was probably due to difference in qualities.

Dondaiche.—Sixteen cartloads of known weight (12 belonging to cultivators) were recorded and all weighed 2 to 4 seers per cart less except three where the discrepancy was considerably larger. The rates in this market compared unfavourably with Dhulia rates for the same date.

The other answers do not bring out any point of importance. The investigators have not been very successful with the market investigations, indeed it appears that both buyers and dalals put obstacles in the way of their finding out exactly what deductions the cultivator has to submit to. Such information as has been obtained bears out the conclusions already arrived at, *viz.*, that weighments are on the whole accurate but in several markets deductions are made to which cultivators object, and secondly, that the seller—whether cultivator or trader—often does not get the rate at which the bargain is struck and has to submit to deductions enforced by the buyer.

SUMMARY OF MARKET RECORDS.

Name of Market.	Date	Number of cultivators	Amount, i.e., produce sold. Rs a p	Number of merchants	Amount, i.e., produce sold Rs a p	Remarks.
Amalner	3rd December 1925	16	1,502 5 0	34	6,932 14 6	
	4th December 1925	15	2,987 7 6	35	7,013 2 6	
	20th January 1926	15	2,727 10 0	35	6,381 5 9	
	21st January 1926	15	2,754 11 3	35	6,404 3 9	
	22nd January 1926	10	1,828 11 9	40	7,568 7 6	
	23rd January 1926	9	1,539 7 9	41	7,443 11 6	
		80	13 340 5 3	220	41,743 13 6	
Dhulia	28th October 1925	42	10,187 13 0	8	2,353 2 0	
	29th October 1925	47	10,901 8 6	3	1,889 4 0	
	13th January 1926	27	6,341 10 9	23	10,812 7 0	
	16th January 1926	31	5,818 15 9	19	7 558 14 9	
	18th January 1926	20	3,978 10 6	30	7,839 0 3	
	19th January 1926	17	3 079 0 0	33	5,994 10 9	
		184	40 307 10 6	116	36 447 6 9	
Dondaiche	7th November 1925	44	9 694 3 6	6	5 060 6 0	
	24th November 1925	14	2 005 1 6	3	599 3 3	
	17th January 1926	5	2 306 11 3	2	3 429 9 3	
		63	14 006 0 3	11	9 089 2 6	
Sherpur .. .	6th January 1926	9	2 210 4 3	2	1,182 6 6	
	7th January 1926	7	852 8 3	1	486 3 3	
	8th January 1926	9	2 012 7 9	3	4 478 7 0	
	9th January 1926	23	4 05[illegible] 14 3	3	2 337 8 9	
	10th January 1926	13	3 6[illegible] 15 3	3	4 157 10 0	
		61	12 [illegible]70 1 9	12	12 642 4 3	
Nandurbar . ..	25th November 1925	5	707 8 9	9	2,333 5 0	
	26th November 1925	13	2 76[illegible] 7 9	20	1,301 9 3	
	13th January 1926	2	174 [illegible] 9	1	413 11 0	
	15th January 1926	2	557 3 0	1	157 0 9	
		22	4 202 13 3	31	4 205 10 0	
Jalgaon ..	2nd December 1925	5	680 2 0	11	5 006 2 0	
	3rd December 1925			13	4 350 4 0	
	23rd December 1925			6	4 062 3 0	
	24th December 1925			4	1 961 15 0	
	26th December 1925	1	75 2 0	6	1 284 4 0	
	16th January 1926			3	4,9[illegible]1 12 0	
		6	755 4 0	43	21 616 8 0	
Mahelji	25th November 1925	1	134 12 0	3	774 6 0	
	30th November 1925			1	297 15 0	
		1	134 12 0	4	1 072 5 0	
Pachora .. .	25th November 1925	16	3 699 4 0	2	912 0 9	
	26th November 1925	11	2 580 13 3	7	2 997 5 3	
	Total ..	27	6 280 1 3	9	3,909 6 0	

Note.—Shahada visited too late to get details.

due to the fact that the 'home' weights were based on a different maund. In this market weights were taken to fractions of a seer.

Another interesting fact is that some cultivators are charged Re. 1 per cent. Adhat and some annas 12 per cent. while traders only pay 8 annas Adhat per cart. Hamali and Dharmao at 4 and 2 annas per cart respectively are the same for all.

One dispute over quality is recorded resulting in deduction of 2 annas per maund. The prices vary considerably but considering the dates this was probably due to difference in qualities.

Dondaiche.—Sixteen cartloads of known weight (12 belonging to cultivators) were recorded and all weighed 2 to 4 seers per cart less except three where the discrepancy was considerably larger. The rates in this market compared unfavourably with Dhulia rates for the same date.

The other answers do not bring out any point of importance. The investigators have not been very successful with the market investigations, indeed it appears that both buyers and dalals put obstacles in the way of their finding out exactly what deductions the cultivator has to submit to. Such information as has been obtained bears out the conclusions already arrived at, *viz.*, that weighments are on the whole accurate but in several markets deductions are made to which cultivators object, and secondly, that the seller—whether cultivator or trader—often does not get the rate at which the bargain is struck and has to submit to deductions enforced by the buyer.

SUMMARY OF MARKET RECORDS.

Name of Market.	Date	Number of cultivators	Amount, i.e., produce sold	Number of merchants	Amount, i.e., produce sold	REMARKS.
			Rs a p		Rs a p	
AMALNER	3rd December 1925	16	1,502 5 0	34	6,932 14 6	
	4th December 1925	15	2,987 7 6	35	7,013 2 6	
	20th January 1926	15	2,727 10 0	35	6,381 5 9	
	21st January 1926	15	2,754 11 3	35	6,404 3 9	
	22nd January 1926	10	1,828 11 9	40	7,568 7 6	
	23rd January 1926	9	1,539 7 9	41	7,443 11 6	
		80	13 340 5 3	220	41 743 13 6	
DHULIA ..	28th October 1925	42	10,187 13 0	8	2,353 2 0	
	29th October 1925	47	10,901 8 6	3	1,889 4 0	
	13th January 1926	27	6,341 10 9	23	10,812 7 0	
	16th January 1926	31	5 818 15 9	19	7 558 14 9	
	18th January 1926	20	3 978 10 6	30	7,839 0 3	
	19th January 1926	17	3 079 0 0	33	5,994 10 9	
		184	40 307 10 6	116	36 447 6 9	
DONDAICHE . .	7th November 1925	44	9 694 3 6	6	5 060 6 0	
	24th November 1925	14	2 005 1 6	3	599 3 3	
	17th January 1926	5	2 306 11 3	2	3 429 9 3	
		63	14 006 0 3	11	9 089 2 6	
SHERPUR	6th January 1926	9	2 210 4 3	2	1,182 6 6	
	7th January 1926	7	8[illegible]2 8 3	1	486 3 3	
	8th January 1926	9	2 012 7 9	3	4 478 7 0	
	9th January 1926	23	4 05[illegible] 14 3	3	2,337 8 9	
	10th January 1926	13	3 6[illegible] 15 3	3	4 157 10 9	
		61	12 [illegible]70 1 9	12	12 642 4 3	
NANDURBAR .	25th November 1925	5	707 8 9	9	2,333 5 0	
	26th November 1925	13	2 76[illegible] 7 9	20	1,301 9 3	
	13th January 1926	2	174 [illegible] 9	1	413 11 0	
	15th January 1926	2	537 3 0	1	157 0 9	
		22	4 202 13 3	31	4,205 10 0	
JALGAON	2nd December 1925	5	680 2 0	11	5 096 2 0	
	3rd December 1925			13	4,250 4 0	
	23rd December 1925			6	4 062 2 0	
	24th December 1925			4	1,961 15 0	
	26th December 1925	1	75 2 0	6	1,2[illegible] 4 0	
	16th January 1926			3	[illegible] 12 0	
		6	755 4 0	43	21,[illegible]	
MAHIJI .. .	29th November 1925	1	138 12 0	3	[illegible]	
	30th November 1925			1	[illegible]	
		1	138 12 0	4	[illegible]	
PACHORA .. .	2[illegible]th November 1925	16	[illegible]	[illegible]	[illegible]	
	26th November 1925	11	[illegible]	[illegible]	[illegible]	
	Total ..	27	[illegible]	5	[illegible]	

Note.—Shahada visited too la[illegible] to get [illegible]

2. Cotton Finance Enquiry—Berar.

(a) *Village Investigations—Summary.*

(1) Twelve villages were selected for these enquiries, three each from the districts of Yeotmal, Amraoti, Buldana and Akola.

Detailed replies have been received from 940 cultivators as under :—

District	Village	Number
Yeotmal District.	Malkhed	46
	Lakh	37
	Kalamb	100
	Total	183
Amraoti District	Itki	58
	Haturna	47
	Loni	75
	Total	180
Buldana District	Shegaon	100
	Kherda	77
	Asalgaon	100
	Total	277
Akola District	Sirsoo	100
	Gaigaon	100
	Batwadi	100
	Total	300

Four replies are not complete owing to the cultivators being absent from the village at one or more stages of the investigation.

Summaries of the information* obtained from each village are attached.

The same difficulty with regard to strict adherence to the different periods of enquiry laid down, as was experienced in the

* Published separately.

Khandesh investigation, was also found in Berar. The periods were modified as under :—

Yeotmal District ..	1st period—1-30th November 1925.
	2nd period—1-31st December 1925.
	3rd period—15th January 1926 to 20th March 1926.
Amraoti District ..	1st period—1-30th November 1925.
	2nd period—1st December 1925 to 31st January 1926.
	3rd period—1st February to 31st March 1926.
Buldana District ..	1st period—1st October to 30th November 1925.
	2nd period—1st November to 15th December 1925.
	3rd period—1st January 1926 to 28th February 1926.
Akola District ..	1st period—Before 10th November 1925 to 7th December 1925.
	2nd period—10th November 1925 to 15th January 1926.
	3rd period—March and April 1926.

It would appear advisable that, in similar enquiries in future, village investigations should be continued, say from 1st October to 31st March, and monthly records kept of the operations and transactions of each individual grower in a village over that period of time.

(2) *Total holdings and cotton areas.*

The total holdings and the cotton area of the cultivators recorded in the 12 villages under investigation are approximately 30,980

and 16,860 acres, respectively. That is to say, 54·4 per cent. of the cultivated area recorded is under cotton, the remainder being under various grain crops, chiefly jowar. The average size of holding is approximately 33 *acres.*

The following table shows the sub-division of the cultivators recorded according to the size of their holdings :—

Small, *i.e.*, below 15 acres	352
Medium, *i.e.*, 15-50 acres	435
Medium large, *i.e.*, 51-100 acres ..	112
Large, *i.e.*, over 100 acres	37
Total ..	936 (4 unrecorded).

Of the 940 cultivators recorded, 477 (50·7 °/ₒ) are proprietors, 159 (17 °/ₒ) are tenants and 304 (32·3 °/ₒ) are both proprietors and tenants.

(3) *Indebtedness.*

A good deal of information with regard to the extent of cultivators' borrowings is contained in the summaries and a statement is appended showing, village by village, the number of cultivators with and without advances, the total amount borrowed from different sources, the average amount borrowed per cultivator taking advances and the amounts taken under different rates of interest (Statement No. 1).

Many cultivators complain of the exorbitant rates of interest charged by the village sowkars. The Chief Investigator remarks in his report that the poor seasons of the last two years are responsible for a considerable increase in village indebtedness.

Out of 940 cultivators recorded, 595 (63·3 per cent.) have taken advances amounting in all to Rs. 3,47,338. The average borrowing per head is, therefore, Rs. 583.

The maximum amount borrowed per head is Rs. 989 in Kalamb village and the minimum Rs. 145 in Kherda village.

The average borrowings per acre of cotton, for the different classes of cultivators, are to be found in the village summaries. These are summarised below :—

Village	Average cash advance per acre of cotton.			
	Small	Medium	Medium-Large	Large
	Rs a	Rs a	Rs a	Rs a.
Malkhed	11 0	16 0	17 0	7 0
Lakh	31 0	18 0	17 0	*Nil.*
Kalamb	59 0	25 0	36 0	23 0
Ithi ..	6 0	8 0	5 0	2 0
Haturna	6 0	3 0	7 0	*Nil*
Loni ..	7 0	11 0	7 0	*Nil*
Shegaon	13 0	12 0	11 0	*Nil.*
Kherda	7 0	6 0	6 0	1 0
Asalgaon	7 0	10 0	9 0	*Nil*
Sirsoo	35 0	31 0	31 0	27 0
Gaigaon	67 0	24 0	26 0	58 0
Batwadi	59 0	31 8	123 0	*Nil*

Although no attempt at a general enquiry into agricultural indebtedness was made, the figures recorded appear to justify the conclusion that indebtedness on the whole is moderate. There are very few instances recorded of cultivators taking loans in the form of cotton seed. No record was received of a cultivator having entered into a bond to sell his kapas through his money-lender.

Only one cultivator sold any of his crop in advance. In this single case, only the crop remaining after two pickings was sold, and the cultivator received Rs. 100 for six acres.

Advances recorded in the second period (*i.e.*, subsequent to cultivation advances) are negligible. Many cultivators state that they are required to sell off their crop early in order to repay the money-lenders, but it is difficult to reconcile this assertion with the actual recorded times of sales, which will be discussed later on.

Relation between tenantry and indebtedness.

Evidence recorded goes to show that there is a more or less close relationship between tenantry and indebtedness. In 9 villages investigated there are 119 tenants alone, of which 91 or 76·5 per cent. are debtors. In the same nine villages, there are 320 proprietors alone, of which 135 or 42·2 per cent. are debtors.

However, though the percentage of debtors is greater in the case of tenants, the amount of debt incurred by proprietors is nearly three times that incurred by tenants. The incidence of debt per head in the case of tenant-debtors is Rs. 187, while in the case of proprietor-debtors it is Rs. 463. In Akola section, the Chief Investigator has shown that the debt taken by proprietors is nearly seven times that taken by tenants. This result is to be anticipated from consideration of the wider credit which is generally at the disposal of proprietor-cultivators in comparison with tenant-cultivators.

Source of borrowings.

The appended Statement No. 1 shows the different sources of borrowing and the total amount borrowed from each source in each village under investigation. The principle source of borrowings is, as in Khandesh, the village sowkar or money-lender. In Yeotmal, Amraoti and Buldana districts out of a total sum of Rs. 1,52,580 taken by cultivators in advances, no less than Rs. 1,39,980 (91·7 per cent.) was obtained from the sowkar. In comparison with this, the other sources of borrowing are of minor importance. It is noteworthy that, at least in these three districts co-operative finance is practically never made use of. This is quite in contradistinction to Khandesh where, on the whole, co-operative societies advanced reasonably large amounts to the cultivators. In the Akola district, however, out of a total sum of Rs. 1,94,758 taken in advances, Rs. 1,01,257 or approximately 52 per cent. was borrowed from some co-operative institution, *e.g.*, society or bank. The record of loans taken from dalals or traders is negligible and is in definite contradistinction to the commonly expressed opinion that many cultivators are financed by such traders, either on condition of selling their crop through them or of mortgaging all or part of it in advance. This may be due in part to the circumscribed character of the enquiry but, taken in conjunction with the evidence from Khandesh, it would appear to indicate that such forms of financing are being definitely abandoned in these cotton-growing tracts.

Rate of interest on loans.

Statement No. 1 appended shows the total amounts borrowed in each village classified according to the rates of interest demanded. As might be expected in villages where the only real source of advances is the sowkar, the general level of interest charges is high and the almost universal complaint of the cultivators recorded in this connection seems to be justified. Out of a total borrowing of Rs. 3,47,338, Rs. 72,693 or 20·9 per cent. was lent at rates of interest above 20 per cent. per annum. Only Rs. 29,261 or 8·4 per cent. was lent at under 12 per cent.

This includes Rs. 1,980 borrowed from relatives on which no interest was stated to be charged.

The great bulk of advances taken Rs. 2,45,384 or 70·7 per cent. was given on rates of interest varying from 12 to 20 per cent.

It is noteworthy that during the village enquiries at Gaigaon a village in Akola section, it was found out that certain land-owners had been borrowing considerable sums from co-operative credit societies at 12 per cent. and, at the same time, were advancing varying amounts to small cultivators at 24 per cent. That such action is possible denotes a want of safeguards by the co-operative credit societies in their financing transactions.

Special mention may be made of the "sawai" system of making advances which seems to be common in some villages, notably Kalamb where Rs. 22,145 out of a total of Rs. 70,236 was advanced in this way. Money-lenders in the villages advances loans to cultivators on mortgage of land. These loans are generally for short periods—3-6 months—and carry the privilege of renewal. Debts contracted in this way are mostly for agricultural purposes and have to be repaid, either in money or in kind, after harvest by *one quarter more* than the amount received by the money-lender. Altogether Rs. 36,135 or 23·7 per cent. of the total advances recorded were taken on sawai, *i.e.*, at 50 to 100 per cent. per annum.

4. *Yield of kapas.*

Statement No. 2 attached shows the yield of kapas, total and per acre, in each of the villages under investigation. The yield per acre varies considerably averaging 62 lbs. in Buldana district, 210 lbs. in Amraoti district and 152 lbs. in Yeotmal district. Only in Amraoti district is the crop said to be better than last year; whereas, in Buldana district, it is reported to be almost a failure.

The average yields per acre for each class of cultivator in each village recorded are tabulated below :—

District.	Village.	Yield of kapas per acre (lbs.)			
		Small under 15 acres.	Medium 15-50 acres.	Medium-Large 50-100 acres.	Large over 100 acres.
Yeotmal	Malkhed	154	165	222	259
"	Lakh	72	94	89	174
"	Kalamb..	209	133	141	205
Amraoti	Itki	264	231	285	402
"	Haturna	264	198	177	178
"	Loni	153	139	121	135
Buldana	Shegaon	47	43	61	25*
"	Kherda	71	105	64	121
"	Asalgaon	28	40	37	41
Akola	Sirsoo	73	93	125	181
"	Gaigaon	130	122	114	102
"	Batwadi	126	127	106	152

5. *Sales.*

(*a*) *Method of sale.*—The total amount of kapas produced by the cultivators recorded in the villages under investigation was approximately 22,29,244 lbs. Of this amount :—

(*a*) 11,65,887 lbs. (52·3%) were sold in villages.

(*b*) 7,73,251 „ (34·7%) were sold in markets.

(*c*) 2,90,106 „ (13· %) were unsold at the close of the investigation.

Statement No. 3 attached shows the percentage of local and market sales, village by village. The local sales were made mostly to petty cotton merchants and many cultivators state that they prefer this method of sale as they thereby avoid the difficulties, discomforts and incovenience encountered in the markets. However, the majority of sales were made in regulated markets and considerable information has been obtained with regard to the system of sale in such centres. Summaries of this information will be

* Only one cultivator with 124 acres under cotton.

found under "replies regarding general information" on the village sheets attached.*

The system of cotton markets in Berar has been carefully organised and regulated and all the recognised markets are managed by Market Committees and governed by market laws and regulations. This enquiry, however, brings out most clearly that the theory of management is considerably better than the practice in most of the markets and that there is considerable scope for improvement in the interests of the cultivators.

From replies received, the chief complaints of the sellers are :—

(1) The rate of sale fixed in the market is hardly ever adhered to and the cultivator does not know what actual rate he will receive for his kapas until weighment is started or, in some cases, completed. Several cultivators said that the rate was not disclosed until final payment was made by the adatya.

(2) The adatyas have undue power in the markets and they are found to work mostly in the interests of the buyers.

This is said to be due to the fact that the cotton growers are unrepresented or inadequately represented on the Market Committees.

All market sales have to be conducted through adatyas.

(3) There is a very general complaint of unfair deductions, both in money and in kind, from the seller at the time of weighment and final payment for his kapas. These deductions are generally said to be on account of particular reasons affecting the quality of the kapas, *e.g.*, rain damage, black leaf, boll worm stain, last pickings, etc., etc. Such deductions amount to 14-28 lbs. of kapas per cart and, though originally fixed by the market committees as compensation for inferior quality, have now become a general practice. In Amraoti market, every cart of kapas was subject to a deduction of 2 dhadas (14 lbs.) this season, irrespective of the quality of kapas it contained. Several cultivators record that a deduction of 1 dhada per cart is made in cloudy weather. Likewise many cultivators state that they are required to give small quantities of kapas to market menials, weighmen and ginning factory employees.

* Published separately.

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Statement No. 3 attached shows the percentage of local and market sales, village by village. The local sales were made mostly to petty cotton merchants and many cultivators state that they prefer this method of sale as they thereby avoid the difficulties, discomforts and incovenience encountered in the markets. However, the majority of sales were made in regulated markets and considerable information has been obtained with regard to the system of sale in such centres. Summaries of this information will be

* Only one cultivator with 124 acres under cotton.

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From replies received, the chief complaints of the sellers are:—

(1) The rate of sale fixed in the market is hardly [illegible] to and the cultivator does not know what [illegible] he will receive for his kapas until weighment [illegible] or, in some cases, completed. Several [illegible] that the rate was not disclosed until [illegible] made by the adatya.

(2) The adatyas have undue power in the [illegible] are found to work mostly in the [illegible]

This is said to be due to the fact that the [illegible] unrepresented or inadequately represented on the [illegible]

All market sales have to be conducted [illegible]

(3) There is a very general compl[illegible] both in money and in kind, from the seller [illegible] and final payment for his kapas. [illegible] said to be on account of particular [illegible] the kapas, *e.g.*, rain damage, black leaf, [illegible] etc., etc. Such deductions amount [illegible] and, though originally fixed by the [illegible] pensation for inferior quality, [illegible] In Amraoti market, every cart of [illegible] of 2 dhadas (14 lbs.) this season [illegible] it contained. Several cultiv[illegible] dhada per cart is made in [illegible] vators state that they are [illegible] to market menials, weighmen [illegible]

* [illegible]

Deductions in the price are equally common and are referred to in para. 1 above. These deductions are specially marked at Amraoti market, where the prices actually received by sellers were Rs. 10 to 35 per khandi under the declared rate. A typical case is recorded by one cultivator from Loni village who took a cart to market where it was purchased without a rate being announced. After 2 or 3 pallas had been weighed, the adatya said the rate would be Rs. 105. But the buyer would only give Rs. 95 and the seller had eventually to accept this rate. One other cultivator says " there is no limit to deductions if the seller is ignorant."

(4) A few cultivators complain that, although beam scales are used for weighing and are quite satisfactory, the mode of weighment is bad and the weighmen manipulate the weighing in the buyers' interest.

There is no complaint that the cultivators do not receive money in full from the adatyas, although in some cases, inconvenience is caused by such payment being delayed until late at night.

The adatyas charge 2 annas per Rs. 100 as commission if payment is made in cash instead of in notes.

All the cultivators recorded, with very few exceptions, have declared themselves in favour of open markets provided rates are fixed by competition and open bidding and declared at the actual time of sale. Several cultivators thought that carts should be valued individually and the rates declared in the market.

The following table shows the method of sale, *i.e.*, in market or village or both, by different classes of cultivators. Lint sales are also noted :—

Class of Cultivator.	Sales made in			Lint sale.
	Village.	Market.	Both village and market.	
Small under 15 acres	282	180	6	*Nil.*
Medium 15-50 acres	246	303	24	5
Medium-Large 50-100 acres ..	57	95	9	9
Large over 100 acres	3	39	1	6

Further information in detail regarding market sales is to be found under market investigation reports

(b) *Sales of lint*—By far the great majority of the cultivators recorded sold their kapas in an unginned condition Only 19 cases of actual sales of lint are recorded although there is evidence to show that a considerable proportion of the kapas unsold at the termination of the enquiry would be ginned and sold as lint As all lint sales were made in the 3rd period of the investigation and rates were not given, it is not possible to institute a complete comparison between the profits of lint sale as compared with kapas sale

The following example is, however, quoted in detail by the Chief Investigator —

1 *Cultivator (No 81 of Loni village)*

Quantity of kapas	Rate offered	Estimated value
35 khandies=21,000 lbs	Rs 105 per 784 lbs	Rs 2,813

Actually received after ginning and lint sale

	Rs
10 bojas at Rs 152 } 10 bojas at Rs 153 }	3,050
Add—Value of seed at Rs 15 per khandi .. .	300
	3,350
Deduct—Ginning charges, etc .	140
Actual amount received	3,210

He, therefore, received Rs 397 or approximately Rs. 11/6 per khandi of kapas *more* by ginning and selling lint

The additional profit of lint sales is realised by several cultivators who state that, if they cannot get a good price for their kapas, they would deposit it for ginning and subsequent sale of lint The following difficulties in the way of doing this are mentioned —

(a) Small growers cannot make these arrangements

(b) Risk of loss in ginning factory by theft, etc.

(c) Want of storage accommodation.

(d) Lint sales are made late (March-May) and cultivators cannot afford to wait for money.

(e) Insurance charges are heavy.

(c) *Time and rates of sales.*—The following table gives the percentage of kapas picked up to the end of the 2nd period of the investigation and the percentage of picked kapas sold at that time :—

District.	Village.	Approximate date of end of 2nd period.	Percentage of total crop picked.	Percentage of picked crop sold.
Yeotmal	Malkhed	31st December 1925.	62 %	41 %
,, ...	Lakh	31st December 1925.	59 %	19 %
,, ...	Kalamb	31st December 1925.	65 %	36 %
Amraoti	Itki	31st December 1925.	Not recorded.	
,, ...	Haturna	31st December 1925.	Do.	
,, ...	Loni	31st January 1926.	Do.	
Buldana	Shegaon	30th November 1925	56 %	48 %
,, ...	Kherda	15th December 1925	88%	57 %
,, ...	Asalgaon	30th November 1925	48 %	32 %
Akola	Sirsoo	26th November 1925	Not recorded.	
,, ...	Gaigaon	8th January 1926.	Do.	
,, ...	Batwadi	15th January 1926.	Do.	

These figures do not appear—except perhaps in Buldana district—to indicate any extreme urgency to dispose of his kapas on the part of the cultivator.

An attempt has been made, from the evidence recorded to give the number of sales :—

(a) made before 31st December 1925 ;

(b) made between 31st December 1925 and end of investigation.

This information is tabulated below and the following table indicates the distribution of early and late sales according to classes of cultivators —

Village	Early sales before 31st December 1925	Late sales after 31st December 1925	Percentage of total crop unsold at end of enquiry
Malkhed	29	37	33 % on 15th February 1926
Lakh	25	37	13 % on 28th February 1926
Kalamb	71	98	7 % on 20th March 1926
Itki	20	55	20 % on March 1926
Haturna	17	45	37 % on March 1926
Loni	31	65	9 % on March 1926
Shegaon	58	79	14 % on 14th February 1926
Kherda	63	42	10 % on 1st March 1926
Asalgaon	20	86	1 5 % on 6th February 1926
Sirsoo	86	42	1 5 % on 8th March 1926
Gaigaon	61	74	6 5 % on 8th March 1926
Batwadi	80	35	6 % on 17th April 1926

Class of Cultivators	Number of early sales before 31st December 1925	Number of late sales after 31st December 1925
Small under 15 acres	204	251
Medium 15 50 acres	257	318
Medium Large 50 100 acres	71	81
Large over 100 acres	22	22

As in Khandesh, those who sold their crops early got better rates than those who held up their kapas until after December Many cultivators appear to have held up considerable portions of their crop until after the end of the year in the hope of getting better rates and it appears that as in Khandesh, there is no severe pressure to sell owing to lack of finance

The rates obtained in the markets were higher than those obtained by village sales, but the difference does not appear to be nearly so great, as was found in Khandesh. A better comparison would have been possible if the rates of late sales had been recorded. Such figures were, however, not called for in the questionnaire and the information on this point is unfortunately incomplete. Special notes on sales are attached under "Summary of Sales" to the village summaries. A statement of the weights commonly used in the villages under investigation is attached. (Statement No. 4.)

STATEMENT No. 1.

Berar Cotton Finance Enquiry.

Abstract of Advances recorded.

District	Name of Village	Number of cultivators recorded: Without Advance	With Advance	Source of Advance Total Rs under each head: Sowkar	Co-operative Society or Bank	Landlords	Adatyas	Other	Total amount taken in Advances	Average amount per head of borrowers	Rates of Interest Total Rs under each head: Nil	Below 12 per cent	12-16 per cent	16-20 per cent	Over 20 per cent	Sawai
								Rs	Rs	Rs						
Yeotmal	Malkhed	7	39	13 020		2 601		1 500	17 121	439	600	175	4 700	305	2 570	8 771
	Lakh	6	31	11 883					11 883	383			1 100	6 850	500	3 433
	Kalamb	79	71	68 541		875		820	70 236	989	810	5 031	26 000	12 760	2 890	22 145
Amraoti	Itki	79	29	3 979	1 450				5 429	187			3 275	1 020	525	..
	Haturna	79	18	2 825					2 825	157	65		1 065	900	795	
	Loni	75	50	8 100	3 735				11 095	239	350	2 375	3 614	2 925	1 885	1 476
Buldana	Shegaon	43	57	16 600	800				17 400	305			11 3?0	3 375	2 675	.
	Khenda	39	39	4 876	500		150	30	5 506	145	66	500	2 945	1 870	625	200
	Asalgaon	44	56	10 166				89	10 255	183	89		5 791	3 800	425	150
Akola	Pimpalgaon	29	72	?? 9?1	40 363				63 314	879			48 866	700	13 748	
	Gaigaon	24	76	9 425	60 874			8 000	78 319	1 031		8 000	65 344	2 150	2 875	
	Patwadi	42	58	53 125					53 125	916		10 000	23 030	7 3?0	7 145	

STATEMENT No. 2.

Area under cotton and yield per acre of the villages investigated.

District.	Village.	Area (Acres.)	Total yield (lbs.)	Yield per acre (lbs.)
1	2	3	4	5
Yeotmal	Lakh	758	78,768	104
"	Malkhed	1,209	250,226	207
"	Kalamb	2,111	305,833	145
Amraoti	Haturna	926	180,000	195
"	Itki	1,125	337,800	300
"	Loni	1,410	190,800	135
Buldana	Asalgaon	1,330	55,830	41
"	Kherda	1,056	103,512	98
"	Shegaon	1,578	72,221	46
Akola	Sirsoo	2,105	281,344	133
"	Gaigaon	2,118	244,720	115
"	Batwadi	1,236	128,380	104

Note.—Area cultivated by recorded cultivators only has been shown.

STATEMENT No. 3.

Berar Cotton Enquiry—Disposal of Kapas.

Name of Village.	Total quantity of kapas produced in lbs.	Percentage of Kapas.		
		Sold in village.	Sold at market	Unsold.
YEOTMAL DISTRICT.				
Malkhed	250,200	26·7	40·6	32·7 on 15th February.
Lakh	78,700	1	85·2	13·8 on 28th "
Kalamb	305,800	88·3	4·7	7 on 20th March.

STATEMENT No. 3—*contd.*

Berar Cotton Enquiry—contd.

AMRAOTI DISTRICT.

Itki	337,800	31·7	48	20 3 on 31st March.
Haturna	180,000	.	62 3	37·7 on 31st March.
Loni	190,800	14 6	84 5	9 on 31st March

BULDANA DISTRICT.

Shegaon .. .	72,200	54 6	31·4	14 on 14th February
Kherda . .	103,500	33 9	56	10 1 on 28th February
Asalgaon .. .	55,800	50 7	46 7	1 6 on 6th February

AKOLA DISTRICT.

Sirsoo .. .	281,344	5	93 5	1 5 on 8th March
Gaigaon	244,720	2 5	91	6 5 on 8th March
Batwadi .	128,380	21	73	6 on 17th April.

STATEMENT No. 4.

Weights used for kapas in the villages and markets investigated.

(1) YEOTMAL DISTRICT.

1. Malkhed. 1 Maund=19 Seers.
   20 Maunds= 1 Khandi.
2. Kalamb. 1 Maund=19 Seers.
   20 Maunds= 1 Khandi.
3. Lakh. 1 Maund=16 Seers.
   20 Maunds= 1 Khandi.

(2) Amraoti District.

1. Itki.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.	
2. Haturna.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.	
3. Loni.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.	

(3) Buldana District.

1. Asalgaon.	1 Maund =20 Seers. 1 Maund =14 Seers.	Two different weights are prevalent.
	20 Maunds= 1 Khandi.	
2. Kherda.	1 Maund =28 Seers. 20 Maunds= 1 Khandi.	
3. Shegaon.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.	

(4) Akola District.

1. Sirsoo.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.	
2. Gaigaon.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.	
3. Batwadi.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.	

(5) In Berar Markets.

28 lbs.= 1 Maund.

28 Maunds= 1 Khandi.

(b) Market Enquiry—Summary.

The investigators made enquiries in the following Berar cotton markets and a complete and interesting report of their investigations has been received from the Director of Agriculture, Central Provinces, and is appended in full:—(1) Khamgaon, (2) Shegaon, (3) Akola, (4) Balapur, (5) Yeotmal, (6) Darwa, (7)

Note.—In the villages of Yeotmal district and in a few others of the other districts of Berar ordinary stones are used for weights. These are only approximate and are generally heavier by a few tolas than the standard weight.

Amraoti, (8) Daryapur, (9) Wun, (10) Pandharkawada, (11) Jalgaon. In addition to the report, individual informatory sheets for each of the above markets were submitted by the investigators.

For the purpose of recording replies from individuals bringing kapas to market, nine market centres were selected. Individual replies were collected from 2,343 persons at different periods of the season. The markets selected and the dates of investigator's enquiries are tabulated below :—

Name of Market	November	December	January	February	March
Khamgaon	14th -20th	23rd	19th	17th	18th
Shegaon		14th 15th	12th, 20th		
Akola		4th, 16th		1st, 2nd	3rd, 6th
Jalgaon	3rd 5th		26th		
Yeotmal	7th, 11th 26th 28th	8th, 11th, 23rd 24th	22nd	23rd, 24th	
Darwa	23rd 24th	1st, 9th, 10th	7th 11th, 20th, 27th,	15th, 16th	
Amraoti*	18th, 19th	8th	15th	20th	
Balapur	28th, 30th	2nd 16th, 17th	11th 15th, 23rd		
Banosa	2nd, 6th	14th	23rd	17th	

* Also on 22nd October

General information to be obtained for each market :—

A copy of the questionnaire will be found on page 67.

Questions (1 and 2)—*Management of market.*—All the markets investigated were managed by Market Committees. The various constitutions of the market committees are given below :—

Markets.	No of representatives from		
	Cotton traders.	Municipality.	Sanitation Panchayat
Khamgaon	3	2	.
Shegaon	3	2	....
Akola	3	2	...
Jalgaon	3	2	....
Yeotmal	3	2	..
Darwa	3	....	2
Amraoti	3	2	....
Balapur	3	....	2
Banosa	3	....	2

In no market recorded, are the cultivators directly represented on the market committee. *Details of the market staffs were given in the market sheets and were tabulated in the investigators' report.

Copies of subsidiary rules and bye-laws framed by the market committees of (1) Akola (2) Darwa, (3) Yeotmal have been supplied along with the investigators' report.

Question (3)—*Conduct of Sales.*—The system of sale in all the markets recorded is similar. The carts assemble in the morning and the buyers and adatyas meet and fix the rate to be offered that day for fine quality cotton. This rate is announced and posted on the market board. The seller then obtains his adatya who purchases a numbered pass from the market daroga which is attached to the cart to be sold. Then the buyers and adatyas visit the carts and settle upon a rate according to the quality of the cotton. In most markets, this fixing of rate is done under cover. In one or two smaller markets where arrivals are few bidding is open and the seller may refuse or accept the rate offered. In most cases, however, the seller does not know the rate until weighment has commenced and the real bargaining is done in the weighing place *i.e.*, the ginning-factory compound. The deductions, both in price and in kind, at the time of weighment is the chief complaint of the cultivators and it is beyond doubt that these deductions are most excessive and constitute a real hardship to the seller. In Yeotmal market the buyer marks the wheel of the cart with a number of crosses in chalk. Each cross represent a deduction of Rs. 5 per khandi from the declared market rate on account of rain damage, inferior quality, etc.

Question (4)—All cultivators must utilise the services of adatyas in making sales at recognised market centres.

Questions (5 and 6)—*Adatyas and brokers.*—The buyers all employ adatyas to act for them in market transaction. The same adatya acts for both buyer and seller, but it is obvious that he is the buyer's man and acts in his interests. The adatyas have servants who move about the market and seek out new business for their masters. The larger firms of buyers employ "brokers" for pur-

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* These and other details will be found in the full report on the enquiry which has been published separately.

chasing their kapas These brokers always act in the interests of the buyers and their duties cease after the actual purchase is made. They do not, like adatyas, see to weighment, and payment of rates

Question (7)—*Advances on kapas* —There are very few instances recorded of cotton being deposited for sale and advances taken thereon Some factory owners undertake to store kapas in their factory compounds provided the owner agrees to get it ginned in that factory On such kapas advances up to 60 per cent of its value are made by the factory owners at rates of interest varying from 15—20 per cent Details of such advances were tabulated at the end of the investigators' report and it is noteworthy that only 4 3 per cent of the cultivators recorded have had recourse to this system.

Questions (8 and 9)—*Fixing of rates* —The daily rate to be offered in each market is fixed by the buyers and adatyas and is posted up on the market board The method used is described in the investigator s report In some cotton markets, Bombay rates are posted but as the cultivators do not know the method of working out the market rate for kapas from the Bombay rate per khandi of lint (Oomras) this is not very helpful to them * In Khamgaon, Akola and Darwa market, daily telegrams are received from Bombay and posted in the market, every morning The rate of the day is posted on a board in each market In Khamgaon market, the posting of the rate is announced by the ringing of a bell

Question (10) *Storage in market* —The only place for storage in the markets is in ginning factory compounds Storage of kapas is not resorted to by the cultivators on any large scale, as there is much risk of theft, etc Some factory owners give advances against kapas stored in the gin compounds, reference question (7) above

Question (11)—*Records* —Records of daily arrivals and rates are maintained by the market committees in all the markets recorded The investigators have submitted a statement showing the number of arrivals and the market rate daily from 1st October 1925 to 30th June 1926 in Khamgaon, Yeotmal, Darwa, Amraoti, Banosa, Akola, Balapur and Shegaon markets This statement is not attached to this report but is available for reference

* The posting of Bombay rates enables cultivators to appreciate the direction of market changes

A statement showing the total arrival of carts (1) for season ending 29th May 1925, (2) for season ending 29th May 1926, at 26 Berar markets is included in the report.

Questions (12 & 13) *Weighments.*—The following statement gives the system of weighment in use in the markets under investigation:—

Market.	Methods of weighment.	Weights commonly used for kapas.
Khamgaon	Beam scales.	56 lb. lots.
Shegaon	Beam scales.	,, ,,
Akola	Beam scales.	,, ,,
Jalgaon	Beam scales.	28 lb. lots.
Yeotmal	Avery platform balance.	....
Darwa	Avery platform balance.	....
Amraoti	Beam scales.	28 lb. lots.
Balapur	Beam scales.	56 lb. lots.
Banosa	....	....

There are no general complaints by the cultivators with regard to weighments. Some state that as there are no weights under 7 lbs (1 dhada) in use, the last quantity of kapas weighed, if under this amount, is ignored and the cultivator loses thereby. The weighmen are also said to be dishonest in some cases and liable to manipulate the weighing to the advantage of the buyer.

The position of the weigh-men in the various markets is as under:—

Khamgaon .. Servants of adatyas and not required to be licensed by the cotton market.

Shegaon .. Engaged by adatya and *paid by buyer* at rate of 5—6 carts to the rupee. They are licensed by the cotton market committee.

Akola .. .. Servants of adatyas and are paid at the rate of 0-2-3 per khandi of kapas weighed. Payment by buyer.

Jalgaon .. Licensed by cotton market committee and paid by seller.

Yeotmal .. Licensed by cottc et committe.

Darwa.. .. Licensed by cott comm

Amraoti .. Licensed by cotton market committee weighing charge is 9 annas 6 annas to coolies for weighing and stacking and 3 annas to weighman per khandi Paid half by purchaser and half by seller

Balapur As at Akola

Banosa . Licensed by cotton market committee, license fee Rs 5 per annum Paid by buyer at rate of Rs 0 2 3 per khandi of kapas weighed

Question (14)—*Deductions*—Market deductions include adat, market cess, gorakshan, charity, dispensary, weighing charge, hamali and toll tax They total from Rs 1 1 9 in Yeotmal to Rs 2 8 0 in Khamgaon The deductions at the various market centres are described in detail in the investigators' report and a tabulated statement of the various deductions in each market recorded is included The cultivators do not have much complaint to make about these customary deductions which appear to be generally accepted They are unanimous, however, in their opinion with regard to deductions made at the time of weighment for alleged inferior quality or rain damaged kapas These deductions are very common both in money and in kind and indications are not wanting that, in some markets, they are becoming customary irrespective of the quality of kapas

Individual answers

Individual replies were received from 2,343 persons in nine different market centres as under —

Name of Market	Individual replies recorded		
	Actual Growers	Petty Merchants	Both growers and merchants
Khamgaon	310	51	8
Shegaon	120	9	
Akola	213	12	
Jalgaon	60	20	4
Yeotmal	328	60	..
Darwa	338	62	
Amraoti	297	26	2
Balapur	2[illegible]8	27	..
Banosa	163	26	9
Totals	[illegible]	[illegible]43	23

It can be seen from the above table that the percentage of carts brought in by cultivators is very large (86·5°/ₒ). In no market investigated was the majority of carts brought in by petty traders as was found to be the case in several instances in Khandesh.

The rates actually settled and received as compared with quoted market rate.

As in Khandesh, the information supplied is not sufficient on which to base any real comparison between the quoted market rate and the rate actually received by the cultivators. However, the rate of sale is given in practically every case recorded and, as the date of the enquiry is also recorded, it has been found possible to tabulate some figures illustrating the variation of rates in different markets at different periods of the season. This statement is appended (Statement A). It shows clearly that, as in Khandesh, the best prices were received by cultivators who sold their kapas early and that, during the season under investigation, " holding for higher prices " must have proved a most unprofitable speculation. In January, February and March, very few bales realised a higher rate than Rs. 116 per khandi and the percentage of sales of " black leaf " cotton, at under Rs. 80 per khandi in these three months is very high. Examination of the tabulated figures will show that there were two definite rates of sale in each month, firstly the rate for fine quality and secondly the rate for inferior " black leaf " or rain-damaged quality. As prices become lower, the percentage of sales on this second and lower rate increases considerably.

Deductions.

The evidence collected from individuals under " deductions from price " is incomplete and, in many cases, is confined to a mere statement of the ordinary market deductions, *e.g.*, adat, hamali gorakshan, etc. There can be no doubt, however, that these deductions were very large both in number and extent and that very few sellers indeed realised the declared market rate for their kapas.

Khamgaon Market.

November .. Declared market rate was Rs. 133-138, only 42°/ₒ of sales recorded got over Rs. 132.

January .. Declared market rate was Rs. 120-115, only 26°/ₒ of sales got Rs. 112-116.

February .. Declared market rate on 17th was Rs. 107; out of 91 sales, only 20°/ₒ got over Rs. 104.

March .. Declared market rate on 18th was Rs. 107; out of 34 sales, only 18°/ₒ got over Rs. 104.

Similarly

Darwa Market.

January—Declared market rate was—

7-1-26—Rs. 118
11-1-26—Rs. 119
20-1-26—Rs. 119
21-1-26—Rs. 119
} Out of 215 sales recorded on these days, only 2·8 per cent. got over Rs. 116.

Similarly

Balapur Market.

November .. Declared market rate on 28th November 1925 was Rs. 123. On 30th November 1925, out of 50 sales, 34 per cent. got above Rs. 120.

December .. Declared market rate on 16th and 17th was Rs. 116 out of 140 sales, only 25 per cent got Rs. 116 or over.

January .. Declared market rates were—

11th—Rs. 122
12th—Rs. 120
15th—Rs. 115
23rd—Rs. 110
} Out of 293 sales on these days only 11 per cent. got above Rs. 116 and only 30 per cent. above Rs. 112.

Akola Market.

March .. Declared rate on 3rd was Rs. 108. Out of 74 sales from 3rd—6th, only 18 per cent. got above Rs. 104 and only 1 per cent. above Rs. 108.

The above instances could be multiplied at any of the other markets recorded but they may be sufficient to indicate the divergence between the rates actually declared on the market board and the rates received by the sellers on the same day.

STATEMENT A.

Sales Summary.

Name of Market.	Dates of Inquiry.	No. of Sales.	Percentage Distribution of Sales recorded according to rates received in Market, per khandi of 784 lbs.												REMARKS.
			Under Rs. 80.	Rs. 80–90	Rs. 90–100	Rs. 100/1–104	Rs. 104/1–108	Rs. 108/1–112	Rs. 112/1–116	Rs. 116/1–120	Rs. 120/1–124	Rs. 124/1–128	Rs. 128/1–132	Over Rs. 132	Declared Market rate.
	NOVEMBER.														
Khamgaon	14th—20th	200	..	..	..	..	..	5.8	6.2	19.6	8.1	2.4	15.8	42.1	138.
Shegaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Akola	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Jalgaon	3rd—5th.	50	..	..	..	..	..	..	..	..	..	2·	30	68.	....
Yeotmal	7th—11th—26th—28th.	90	..	..	7.8	..	25.5	5.5	10.3	..	7.8	40·	..	..	126,121.
Darwa	23rd & 24th.	54	..	..	..	..	7.4	66.7	9.2	..	..	..	..	16.7	139.
Amraoti	18th & 19th.	81	..	..	9.9	4.9	18.5	22.2	8.7	..	..	1.2	..	34.6	138,135.
Balapur	30th.	50	..	..	..	2.	2.	6.	16.	40.	8.	26.	..	..	....
Banosa	2nd & 6th.	58	..	..	..	..	..	..	..	..	..	27.5	12.1	60.4	128,135.
	DECEMBER.														
Khamgaon ..	23rd.	79	..	6.3	8.9	20.2	35.4	29.2	..	..	..	..	..	..	120 on 2/1.
Shegaon	14th & 15th.	71	1.4	2.8	4.2	..	19.7	52.2	..	19.7	..	..	..	..	118,110.
Akola	4th—16th.	186	..	.5	3.8	..	7.	13.	39.2	24.2	7.	5.3	..	..	127.
Jalgaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Yeotmal	8th—11th—23rd & 24th.	142	..	..	..	5.	37.3	50.7	7.8	..	.7	..	..	..	119,112.
Darwa	1st, 9th—10th.	100	..	..	..	2·	4.	2.	24.	25.	26.	10.	3.	4.	136,126,120
Amraoti	8th.	73	1.4	9.6	2.7	..	9.6	6.8	15.1	13.7	8.2	27.4	5.5	..	130.
Balapur	16th & 17th.	140	..	..	.7	.7	..	13.6	58.6	17.2	1.4	7.1	..	..	116.
Banosa	14th.	50	..	..	..	..	2.	6.	38.	52.	2.	..	..	..	120.
	JANUARY.														
Khamgaon ..	19th.	82	2.4	1.2	4.8	2.4	33.1	29.3	26.8	..	..	..	..	..	115.
Shegaon	12th & 20th.	117	11.1	3.4	9.4	7.7	28.2	29.1	11.1	..	..	..	..	..	116,114.
Akola	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Jalgaon	26th	77	6.5	..	17.	15.5	19.4	24.6	17.	..	..	..	..	..	....
Yeotmal	22nd.	51	7.8	2.	2.	..	2.	76.4	9.8	..	..	..	..	..	115.
Darwa	7th, 11th, 20th & 27th.	215	15.3	4.2	5.6	1.8	16.3	18.1	35.9	2.8	..	..	..	..	119,112.
Amraoti	15th.	69	1.5	13.	14.5	..	8.6	10.2	1.5	40.6	10.2	..	..	..	122.
Balapur	11th, 12th, 15th & 23rd.	293	14.	13.6	12.3	6.5	10.6	18.6	19.1	10.6	.7	..	..	..	122,115,110.
Banosa	23rd.	64	6.3	23.4	11.	..	3.1	21.9	34.3	..	..	..	..	..	114.

STATEMENT A—*continued.*

Sales Summary—*contd*

Name of Market.	Dates of Inquiry	No of Sales.	Percentage Distribution of Sales recorded according to rates received in Market per khandi of 784 lbs.												REMARKS Declared Market rate
			Under Rs 80	Rs 80–90	Rs 90–100	Rs 100/1–104	Rs 104/1–108	Rs 108/1–112	Rs 112/1–116	Rs 116/1–120	Rs 120/1–124	Rs 124/1–128	Rs 128/1 132	Over Rs 132	
	FEBRUARY														
Khamgaon	17th.	91	26 4	6	19	22	19	1							107
Shegaon	1st & 2nd	71	50 7	2 8	25 4	14 1	7								106
Akola															
Jalgaon	23rd & 24th.	53	35 8	3 8	3 8	1 9		9 4	47 8	7 5					116 117
Yeotmal	15th & 16th.	58	34 5	6 9	1 7		8 7	31	17 2						116
Darwa	20th	63	45 6	4 4	4 4	5 9	10 3	5 9	23 5						120
Amraoti															
Balapur	17th.	55	39 6	6 9	6 9		12 1	34 5							120
[illegible]															
	MARCH														
Khamgaon	12th.	34	41 2	11 8	17 6	14 7	11 8	2 9							107 110
Shegaon	3rd—6th	74	39 2	10 8	24 4	6 8	17 5	1 3							108
Akola															
Jalgaon															
Yeotmal															
Darwa															
Amraoti															
Balapur															
[illegible]															

3. North Gujarat Investigations.

(a) *Village Enquiry—Summary.*

(1) For the purposes of this inquiry, the investigators worked from three centres, Viramgam, Bavla and Morvi. In all, records were taken from 1,065 cultivators in 15 villages as under :—

(1) *Viramgam* centre ..	Hansalpur	44
	Bhojva	40
	Vani	15
	Detroj	117
	Dumana	44
	Dhakdi	37
		297
(2) *Bavla* centre	Bavla	127
	Rupal	100
	Derun	50
	Chaloda	100
	Visalpur	100
		477
(3) *Morvi* centre	Jetpur	97
	Mota Dahisara	78
	Zankara	59
	Barvalla	57
		291

(2) As the inquiry work did not actually begin until the end of February and, as the crop was, on an average, 1-2 months earlier than in a normal year, it was not found possible to adhere to the periodic nature of the investigations as contemplated in the questionnaires As a matter of fact, in the Viramgam and Bavla centres, much of the kapas or *kallas* (bolls) was already in the hands of the purchasers before the inquiry commenced This late start of the inquiry was most unfortunate as the investigators were quite unable to obtain reliable evidence of early sales and the records are practically confined to cultivators' advances and the ultimate disposal of their produce Intermediate observations between the first picking and the final sales of kapas or kallas have not been made and, to that extent, this investigation does not furnish as complete information as was desired In any future investigations of this nature, it appears most desirable that records should be continuous or that, at the least, arrangement should be made to obtain records at three definite stages (1) before any cotton is picked, (2) during picking and after some early sales have been made and (3) after picking is completed and the bulk of the crop has been sold.

The Chief Investigator in his report states that difficulty in obtaining information was experienced not only on account of the late start of the inquiry and the early crop, as mentioned above, but also as "all the three workers were quite new to the tract and the people" It is suggested that, in future, similar inquiries should not be commenced unless they can be undertaken by investigators who are familiar with the tract, people and conditions in the area where the inquiry is to be conducted.

(3) *Total holdings and cotton area*

The average area of cotton per holding and the percentage of cotton area to total holding of the cultivators recorded in each village are tabulated below. In addition, the sub-division of

cultivators recorded, according to the size of their holdings is included :—

Centre	Name of Village.	Per cent. of cotton area to total holding.	Average area of cotton per holding.	Number of cultivators recorded. Small 15 acres.	Medium 15–50 acres.	Medium-Large 51–100 acres.	Large 100 acres.	Total.
		Per cent.	Acres.					
Viramgam.	Hansalpur	73.4	24	5	33	6	..	44
	Bhojva	55	20¼	1	35	4	..	40
	Vani	67.4	43	..	9	3	3	15
	Detroj	43.7	8	37	80	..	..	117
	Dumana	70	46½	1	17	19	7	44
	Dhakdi	69.1	33	1	18	17	1	37
Bavla.	Bavla	58.9	9	55	72	..	..	127
	Rupal	58.8	11¾	33	67	..	..	100
	Derun	56	15	9	40	1	..	50
	Chaloda	43.3	5¾	68	31	1	..	100
	Visalpur	51.3	5½	91	8	..	1	100
Morvi.	Jetpur	49.5	32¾	1	36	42	18	97
	Dahisara	51	29	3	41	26	8	78
	Zankara	23.5	14½	1	31	20	7	59
	Barvalla	49.8	17	1	49	7	..	57
		..	..	307	567	146	45	1,065

Of the 1,065 cultivators recorded, 540, (50·7 per cent.,) are proprietors, 94, (8.8 per cent.,) are tenants and 431, (40.5 per cent.), are both proprietors and tenants. In the Morvi centre, all the cultivators 291 are recorded as proprietors, *i.e.*, tenants at will of the State.

(4) *Indebtedness.*

The information recorded with regard to advances taken by cultivators is appended in Statement A attached. This statement also shows the amounts taken from each source of advance and the amounts, under each source, taken at different rates of interest.

The village sowkar is by far the largest source of cultivators' borrowings and, on the whole, the rates of interest charged by sowkars are reasonable and compare favourably with similar rates recorded in the Khandesh and Berar inquiries. Out of 774 cultivators recorded in the Viramgam and Bavla centres, 556 (71·8 per cent.) had taken advances, amounting in all to Rs. 1,90,156

of which Rs. 1,72,076 (90·5 per cent) was borrowed from village sowkars. In Morvi villages, no borrowings are recorded with the exception of one or two small amounts, by way of tagavi, from the State Bank (Rs. 2,025).

The average borrowings per head of cultivators taking advances is Rs 342.

Borrowings are highest in Hansalpur, Rupal and Derun villages (Rs 336, 337 and 348 per cultivator recorded) and lowest in Detroj and Bhojva (Rs 118 and 154 per cultivator recorded)

The average borrowings per acre of cotton, for the different classes of cultivators recorded in the Viramgam and Bavla centres are summarised below —

	Village.	Average cash advance per acre of cotton.			
		Small	Medium	Medium-Large	Large
		Rs a	Rs a	Rs a	Rs a
Viramgam	Hansalpur	6 12	14 12	13 4	..
	Bhojva		7 5	5 1	.
	Vani .		15 1	15 0	5 4
	Detroj	21 8	22 10	.	.
	Dumana	12 8	10 4	5 13	1 8
	Dhakdi .		8 4	5 13	.
Bavla.	Bavla ..	32 0	26 7		.
	Rupal ..	26 0	29 2	.	..
	Derun .	32 5	23 12	9 6	..
	Chaloda .	42 0	42 0	..	..
	Visalpur	35 6	20 12	..	28 0

These figures, especially in the Bavla section, are considerably higher than similar data worked out for the Khandesh and Berar tracts and there appears to be no doubt that the cultivators in this tract are in the hands of their financing agents to a much greater extent than in Khandesh or Berar. This opinion is supported by the fact that, although only 63 cultivators record statements that they are under a bond to sell their produce to or through their money-lender, it is often mentioned in the course of the evidence that cultivators are morally bound to sell their kapas or kallas through the person from whom borrowings are made.

Advance sales, either by weight or acreage, are few and this system does not appear to be adopted on a noticeable scale.

Co-operative finance has not been made much use of. Only Rs 4,400 have been borrowed from co-operative credit societies in two villages.

Rates of interest on loans.

Out of Rs. 1,90,156 borrowed from the village sowkars, Rs. 15,865 (8·3 per cent.) was borrowed at 6 per cent., Rs. 12,575 (6·6 per cent.) at 7 per cent., Rs. 37,630 (19·8 per cent.) at 9 per cent., Rs. 65,740 (34·7 per cent.) at 12 per cent. and Rs. 58,346 (30·6 per cent.) at rates above 12 per cent. The rate of interest charged by co-operative societies was $9\frac{3}{8}$ per cent. per annum.

(5) *Yield of kapas or kallas (bolls).*

The following statement shows the average yield of kallas (bolls) or kapas per acre recorded, in each of the villages under investigation. In addition, the average yield per acre for each class of cultivator in each village recorded is included. Yields are in maunds of 40 lbs. both in case of kapas and kallas :—

	Name of Village.	Average yield per acre recorded.		Average yield per acre of different classes of cultivators (in maunds).							
				Small.		Medium.		Medium-Large.		Large.	
		Kapas	Kallas.	Kapas.	Kallas.	Kapas.	Kallas.	Kapas.	Kallas.	Kapas.	Kallas
Viramgam.	Hansalpur	..	2.2	..	1.6	..	2.2	..	2.4	..	..
	Bhojva	..	2.9	..	3.5	..	2.8	..	3.4	..	..
	Vani	..	5 4	..	..	..	4.8	..	4.8	..	6.2
	Detroj	..	5.6	..	3.2	..	6.2	..	..	..	..
	Dumana	..	4.	..	2.6	..	4.2	..	4.1	..	3.9
	Dhakdi	..	2.3	..	3.2	..	2.	..	2.4	..	2.2
Bavla.	Bavla	..	11.	..	10.7	..	11.1	..	..	..	..
	Rupal	..	10.4	..	9.7	..	10.5	..	..	..	..
	Derun	..	ɔ.	..	4.5	..	6.5	..	3.4	..	..
	Chaloda	4.8	..	5.	..	4.7	..	2.	..	..	..
	Visalpur	4.	..	4.2	..	4.9	..	2.1	..	..	..
Morvi.	Jetpur	..	·35	..	..	..	.4	..	.4	..	·3
	Dahisara	..	1.9	..	1.	..	1.5	..	2.1	..	2.
	Zankara	..	.9	..	.3	..	1.	..	1.	..	·8
	Barvalla	..	2.9	..	4.	..	2.9	..	2.6	..	..

It will be noted that the crop in Morvi centre was practically a failure and, in Viramgam centre, only very poor yields were obtained. 1 maund of kallas is estimated to give approximately $\frac{5}{8}$ of a maund of kapas.

(6) *Sales.*

As was noted at the commencement of this summary, the record with regard to sales is most imperfect and it has not been possible to apportion any proportion of sales to different periods of the season. However the system of sales at each of the villages under investigation can be indicated from the records and some idea can be formed as to the period of time when the bulk of the crop was disposed of and as to the general level of prices obtained. The main conclusion which appears to be justified is that, unlike Khandesh and Berar, the cultivators in North Gujarat did not hold their cotton for any appreciable time after picking but disposed of it as soon as possible either locally or in some neighbouring market centre. This would appear to confirm the statement previously made that the cultivators of North Gujarat are in the hands of their financing agents to a much greater extent than their brethren in Khandesh and Nasik as, in the majority of cases, the reason for early sale is stated to be on account of the necessity of repaying interest on old debts and repayments to the sowkars. Indeed in such villages as Hansalpur, where the sowkar is also a cotton trader, the cultivators took little or no part in the disposal of their produce but merely handed it over to their money-lender who credited their account with an amount presumably equivalent to its value. Further in North Gujarat there is so little advantage in price by sale in market as compared with local sales that the impression cannot fail to be given that market sales, in a large majority of cases, are made at the dictation of the sowkar rather than at the free will of the grower. Many cultivators state that they themselves know nothing about the marketing of cotton but are in the hands of the sowkar and have to act according to his instructions.

The system of marketing both in the market centre of Bavla and in Morvi State are described in the summary of market investigations and need not be touched upon here.

Statement B appended summarises in as brief a manner as possible the system of sale, the period of disposal of produce and the average prices obtained in each of the villages under investigation. Further details may be obtained from the "note on sales" which form part of the individual village sheets attached* to this summary.

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* Not printed.

STATEMENT A.

Cotton Finance Enquiry—North Gujarat.

Summary of Advances.

		Cultivators recorded.			Total amount of advances in village.	Average amount per cultivator recorded.	Source of advances and rates of interest.													
							Sowkar.									Co-operative Society.	Relative		Land-lord.	Patadi Durbar.
		With advances.	Without advances.	Total recorded.			6%.	7%.	9%.	12%.	15%.	18%.	22%.	25%.	Over 25%.	9⅜%.	12%.	18¾%.		12%.
					Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Viramgam.	Detroj	79	38	117	20,800	118	..	..	..	13,000	..	..	..	470	..	..	7,175	150	..	..
	Dumana	22	22	44	10,300	234	..	..	..	10,300	..	..	..	..	..	..	..	..	..	..
	Hansalpur	41	3	44	14,768	336	..	..	..	2,710	..	4,000	..	8,076	..	..	..	..	..	..
	Bhojva	26	14	40	6,175	154	..	..	..	4,125	..	..	..	..	..	..	100	..	..	1,950
	Dhakadi	26	11	37	7,480	202	..	..	..	1,850	..	..	..	..	..	..	300	..	5,255	75
	Vani	10	5	15	6,440	429	..	..	..	6,440	..	..	..	..	..	..	..	..	..	..
Bavla.	Bavla	88	39	127	33,588	264	2,100	8,575	15,475	2,600	..	2,463	..	2,375	..	..	..	..	..	..
	Rupal	79	21	100	33,710	337	13,765	..	..	15,370	1,700	1,225	..	1,650	..	..	..	..	..	..
	Chaloda	66	34	100	23,545	235	..	4,000	10,370	6,025	900	890	..	500	60	800	..	..	..	..
	Visulpur	75	25	100	17,980	179	..	400	11,785	1,230	..	155	..	110	..	3,600	400	300	..	..
	Derun	44	6	50	17,395	348	..	..	..	2,100	1,300	9,125	1,100	3,770	..	..	..	..	..	..

STATEMENT B (1).

Viramgam Centre.

Name of Village	Place of Sales	Time of Sales	Rates of Sales per maund of 40 lbs	REMARKS
HANSALPUR (44 Records)	Practically every sale was made at Viramgam *market* Sales were of "kallas	Very *few* sales in January *Bulk of sales in February* All sales completed by 14th March No holding of crop	January sales (16) averaged Rs 3 15 3 per maund of kallas February sales—Rs 3 15 5 Range Rs 3 0—Rs 4 8	Nearly every cultivator had a bond to sell through his sowkar In most cases payment for sales was collected by sowkar and credited to debtor s account.
PHOLVA (40 Records)	Most of sales (31) were made *locally to petty merchants* (kallas) 10 cultivators sold at Viramgam market.	Bulk of sales made in *early March* (34 cultivators) 2 sales each in January and February 1 sale in April	Market (March) (8) Rs 4 0-6 Local (March) (23) Rs 4 0 6 February 3 sales Rs 3 6—Rs 4 April 1 sale—Rs 3 8	Majority of cultivators were tenants of Talati durbar and gave ¼ of produce as "share" to durbar All sales were of "kallas"
VANI (18 Records)	12 cultivators sold kallas *locally*, 4 with dalal 8 without dalal 4 sold at Viramgam market	All kallas (except 99 maunds sold in advance) was *sold in February-early March* No record of any sale after March 15th	Advance sales —Rs 4 2 and Rs 3 1. February sales —Local (13) Average Rs. 3 14 8. Market (7) average Rs 3 14 0	A considerable amount of kapas 423 maunds was given to landlords by tenants on "share" system
DETROJ (117 Records)	All sales were made *locally at Detroj* (kallas) No dalals employed A few (5) sold kapas and (2) sold lint.	All kallas was sold *before middle of March* Bulk of sales in February A few advance sales were recorded	Advance Rs 3 8—Rs 4 February-March 1.1 sales average Rs 3 11 0 Kapas sales —Rs 5 10 10 Lint sales—Rs 16—Rs 16 8	There were no deductions recorded from sales in Detroj market No attempt to hold cotton for higher rates All sales made to 12 15 local merchants at Detroj market
DUMANA (44 Records)	All sales made *locally at Dumana* (kallas) One cultivator sold lint at *Viramgam market*	Practically all kallas was *sold in early March*	8 sales average Rs 3 11 11 Range Rs 3 to Rs 4 2 One lint sale Rs 16-12 per maund Advance sales Rs 4 5	One merchant in the village purchases nearly all the kallas He opens and takes it for ginning to Viramgam at his own expense Cultivators paid after 15 30 days
DHAKADI (37 Records).	Bulk of crop sold, as kallas *to local merchants* One or two cultivators took kapas to Viramgam.	Advance sales (230 maunds) in October Bulk of sales in 2nd *fortnight of March*	Advance —Rs 4 4, Rs 4 Rs 3 12 March sales (39)—Rs 3 7 9 Kapas sales Rs 6 to Rs 6 2.	Cultivators stated preference for sale in village on account of trouble of marketing Crop later, no holding for higher prices

STATEMENT B (2).

Bavla Centre.

Name of Village.	Place of Sales.	Time of Sales.	Rates of Sales.	Remarks.
BAVLA (127 Records).	All the crop sold, as kallas, *locally at Bavla market*. Only six cultivators sold kapas.	January—2 cultivators. February { 1st half—12 cultivators. 2nd half—20 cultivators. March { 1st half—22 cultivators. 2nd half—50 cultivators. April—15 cultivators.	Rates Kallas. Rs. 4-4 to 4-7—41 sales. Rs. 4-8 to 4-11—81 „ Rs. 4-12 to 4-15—10 „ Rs. 5-0 to 5-3 66 „ Kapas Rs. 6-9 to Rs. 8.	Bavla village has a good cotton market. There are 9 ginning factories and 3 presses. No dalals were employed. Market is described in market summary."
RUPAL (100 Records).	The crop was sold as kallas either at Rupal locally or at Bavla market. The *majority of cultivators* (55) sold at both these places. No dalals employed.	Bulk of sales *took place at end of March.* February 9 sales. March 18 sales. April 38 sales.	Rates—kallas. Rs. 4-0 to Rs. 4-3—71 sales. Rs. 4-4 „ „ 4-7—13 „ Rs. 4-8 „ „ 4-11—51 „ Rs. 4-12 „ „ 5-3—53 „ Range Rs. 3-12 to Rs. 5-1.	[illegible] cultivators sold at Rupal (locally) only and 17 at Bavla only. There were two kapas sales at Bavla recorded at Rs. 6-3 and Rs. 8-1-6 per maund.
DERUN (50 Records).	Kallas were sold *locally at Derun* (26) or at *Bavla market* (22). 2 cultivators sold at both places.	All kallas sold by :— 25-2-26—5 cultivators. 25-3-26—27 cultivators. 20-4-26—16 cultivators. 2 cultivators sold kallas in May 1926.	Rate for kallas varied between Rs. 4 and Rs. 5. 39 local sales average Rs. 4-10-3. 57 Bavla sales average Rs. 4-10-9. May sale—Rs. 4.	Most of cultivators appear to be in the hands of sowkars and sell off their produce at their dictation. Best rates obtained in February.
CHALODA (100 Records).	All sales made in form of *kapas* to petty merchants *locally at Chaloda.* Only one sale at Bavla market.	*Bulk of sales from mid January to end February.* Only two cultivators made any sale in March.	Range of rates (kapas) Rs. 5-12 to Rs. 7-10. 84 sales between Rs. 6-7 and Rs. 6-13. Only 11 sales over Rs. 7-5.	All kapas sales. It appears that crop was all sold off as early as possible to petty merchants (adatyas).
VISALPUR (100 Records).	All sales made in form of kapas. Great *majority 90 per cent. sold at Bavla or Sanand* markets. Only 10 local sales at Visalpur. Dalal was employed in most cases.	All local sales made before 15th February. Great bulk of sales were *made between 1st and 15th February.* Only 6 sales made in March.	Range of rates (kapas) Rs. 6 to Rs. 7. Average Rate—Rs. 6-9. Local sales fetched equal rates to market sales. 6 March sales average Rs. 6-8.	Majority of sales at market although local sales appear to bring just as good rates. Sales made early and there is obviously no attempt to hold cotton for higher prices.

STATEMENT B (3).

Morvi State Centre.

Name of Village	Place of Sales.	Time of Sales.	Rates of Sales	Remarks
Jetpur (47 Records)	Lint sales by means of "Khatias" at "Madel" Morvi Auction sale under State supervision.	4th May 1926.	Rs. 7 0-3 per maund lint	13 cultivators retained all their lint for private use
[illegible]ta Dahisara (78 Records)	Do.	4th May 1926 24th May 1926	Rs 7 0 0 } per maund for 'Durbari' Rs 8 1 0 } cotton. On 4th May "Bhayati" cotton fetched Rs 8 12	'Durbari' cotton, i.e., cotton from ordinary cultivators, tenants at will of the State is liable to State duty of 5 annas per rupee on sale price. "Bhayati" cotton grown by State Bhayats or Inamdars is taxed 15 annas per maund of lint
Zankara (37 Records).	Do. All lint bought by Dayalbhai Ishwar & Co., Morvi.	20th April 1926 25th May 1926 73 maunds on 20th April 1926 20 maunds on 25th May 1926	Rs 7 3 3 } per maund Rs 7 0-3 }	Crop very poor, 21 cultivators kept all their lint only small amounts for their own use
Ravalia (37 Records).	Do.	23rd March 1926 4th May 1926. 6th May 1926 182 maunds (70 3 per cent.) 23rd March 1926 179 maunds (26 2 per cent.) 4th May 1926 24 maunds (3 5 per cent.) 6th May 1926	Rs 8-1-0 } per maund Rs 7 8 0 } Rs 8 5 3 }	All the lint was sold to one buyer. Note.—Description of method of marketing cotton in Morvi State will be found under "Market Investigation Summary."

(b) *Market Enquiry—Summary.*

A. General Information.

The investigators have submitted general information with regard to only three market centres in North Gujarat:—Bavla, Dhanduka and Koth. In addition, the investigator in Morvi State has furnished a note on marketing cotton in Morvi.

The information received is summarized below:—

(1) There is no regular market in any of the places investigated and therefore there are no rules or bye-laws governing the conduct of trade, etc. No market committees have been formed and disputes and differences are settled by influential local merchants and gin-owners.

(2) *Methods of sale.*—In Bavla market, cultivators and petty merchants bring kapas or kallas (bolls) at night or in the early morning. Sales are effected in the morning between 7 and 12 o'clock. The purchasers go round and sample the carts and settle rates with sellers. There are four dalals or middlemen but their functions seem to be indefinite and the great majority of sales are effected without their intervention. It appears that, in cases of dispute, the services of these dalals are requisitioned for settlement. In Koth market, only petty merchants bring cotton purchased in the villages. There appears to be very little buying or selling here and there are no dalals. The petty merchants store their kapas in ginneries and have their stocks ginned and pressed on their own account. This centre can hardly come under the description of a cotton market. In Dhanduka, cultivators bring kallas for sale in the evening and sales are effected the same night. There are no dalals or middlemen and the kallas is disposed of by public auction. Cultivators are not bound to sell to the highest bidder but in practice, the sale is generally made.

(3) *Deductions.*—In Bavla market, regular deductions are as unders:—

	Kapas. Rs.	a.	p.		Kallas. Rs.	a.	p.	
(1) Dalali	0	1	6	per maund.	0	1	0	per maund.
(2) Weighing	0	2	0	per cart.	0	4	0	per cart.
(3) Heaping (labour) ..	0	2	0		0	4	0	

	Kapas.	Kallas.
	Rs. a. p.	Rs. a. p.
(4) Panjrapol	0 2 0	0 2 0
(5) Charities	0 2 0	0 2 6
(6) Water	0 1 0	0 1 0

In addition 1 per cent. is deducted from price for ready money paid to the sellers.

There appears to be a fairly general complaint about deductions during weighment, due to the fact that the last quantity left in the scales is not allowed for. This loss is calculated to mean ¼ lb. per maund of kapas and ½ lb. per maund of kallas in Bavla market.

There are also several instances of deduction in rate during weighment "kadado" owing to alleged inferior quality. Details of such disputes are given under individual replies.

(4) *Weighments.*—In the markets investigated, there are weighbridges for weighing carts but kallas or bolls are commonly weighed on a "talah" or wooden balance by hand. Many cultivators state that this method of weighment lends itself to fraud and they urge the introduction of improved iron scales.

In Bavla market, weighmen are employed by the gin-owners but paid by the cultivator or seller at the rate of Re. 0-2-0 per cart of 25-30 maunds of kapas or kallas. If the cart exceeds 30 maunds another Re. 0-2-0 is charged. In Dhanduka, the cultivator produces his own weighman who is paid by the buyer at the rate of Re. 0-2-0 per bhar of 16 maunds. (1 maund=40 lbs.).

(5) *Rates.*—As there are no regular markets, rates are not posted in any of the centres investigated and records of arrivals are not kept. The latest Bombay prices are received by telegram by leading merchants.

(6) *Advances.*—Advances are given by gin and press-owners to petty merchants who store kapas in gin compounds for ginning. Such advances generally amount to 75 per cent. of the value of the produce and carry interest from 6-12 per cent. according to the credit of the borrower.

(7) *Storage.*—Apart from the compounds of ginning factories, the only storage accommodation is the shops or "Vakhars" of petty merchants or adatyas where kâpas or kallas is collected previous to ginning.

(8) *Opening of kallas.*—In Bavla market, the charge for opening bolls and extracting kapas is Re. 0-9-0 per 60 lbs. (1½ maunds). This rate is not fixed but varies between 8 and 12 annas.

(9) As will be seen from the replies received from individuals the market centres investigated are almost entirely used by petty merchants who purchase kapas or kallas in the villages and bring it in for opening, ginning, pressing and subsequent lint sales. The number of cultivators who use the market is very small. It is to be regretted that the investigators were not able to conduct inquiries in a larger number of sale centres as the evidence recorded is insufficient to enable a real appreciation of cultivators' marketing difficulties to be formed.

B. Cotton Marketing in Morvi State.

(10) The marketing of *all* the kapas or kallas grown in the State is conducted by auction, under State control, at Madvi in Morvi proper. Local dealings in cotton are not permitted and each village has a committee, consisting of the revenue patel and four other leading cultivators, who prepare "khardas" or lists showing the quantity of lint for sale by each individual grower in the village. These lists are sold by auction at Madvi, where auction sales are held twice a week—on Tuesdays and Fridays—during the season before the State authorities, the Bank Manager and the Customs Officer. As there are only three large buying firms in Morvi, all of whom are well acquainted with the quality of lint from each village in the State, sales are made from the "khardas" only and the lint itself is not brought to the press until later when the purchaser requires it. The State levies a duty of 5 annas in the rupee which is paid by the purchaser. This duty is taken into account during the auction and the prices offered are reduced accordingly. The cultivators therefore suffer the burden of the monetary loss amounting to nearly one-third of the value of their crop. The purchase money is received by the village committee about 15 days after the sale of the "kharda" and is distributed by them to the cultivators in proportion to the amount of lint entered in the "khar-

la" by each individual At times, especially in bad years, when he growers require money to meet assessment charges, etc, the 'khardas" are mortgaged to the State Bank or to a purchasing irm The lint is weighed out to the agent of the buyer in the presence of the village committee at the cultivators' houses and is packed into gunny bags, each containing 23 maunds of lint The ultivators are obliged to deliver the lint at their own expense to he buyer at the State Press in Morvi usually during the months of April to June The furthest villages are 36 miles from Morvi and the nearest 5 miles Pressing charges, amounting to Rs 12 or each lint bale of 380 lbs, are borne by the purchasers This ystem has come into force during the past 16 years and is now ompulsory The chief complaint of the cultivator is the heavy duty, payable to the State, which is almost entirely borne by the growers

C. Individual Replies.

(11) Only one market centre, Bavla, was selected for the purpose of recording replies from individuals bringing cotton to Market The following statement gives the dates of inquiry, the number of ndividuals recorded, growers and petty merchants and the total amount of kapas or kallas brought by those recorded each day of nquiry —

Date of Inquiry	Individuals bringing cotton recorded			Amount brought	
	Grower	Petty Merchant	Both grower and petty merchant	Kallas in maunds (40 lbs)	Kapas in maunds (40 lbs)
3rd March 1926	1	44	.		1,129
8th March 1926	2	41			1 208
13th March 1926	3	43			1,226
19th March 1926	6	37	3	415	856
27th March 1926	7	19	2	131	603
28th March 1926	2	15	1	565	320
10th April 1926		31	2	195	696
11th April 1926		13			315
23rd April 1926	6	32	..	119	845
24th April 1926	2	5			178
	29	283	8	1 425	7 406

The above statement shows the large percentage of petty traders, *i.e.*, who had purchased the cotton they were bringing to market (88.6 per cent.) as compared with actual cultivators who had grown it (9.1 per cent.). The small percentage of kallas, *i.e.*, bolls (16.2 per cent.) as compared with kapas (83.8 per cent.) is also noticeable.

(12) *Rates received.*—The actual rates received by the sellers for their produce were recorded in each case. These rates were the ones accepted by the seller at the time of sale and are exclusive of subsequent deductions which are dealt with at a later stage of this summary. The highest, lowest and average rates recorded, both for kapas and kallas sales on the days of the inquiry are tabulated below :—

Date of Inquiry.	Number of records.	Recorded Rates per maund of 40 lbs.					
		Kapas.			Kallas.		
		High.	Low.	Average.	High.	Low.	Average.
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
3rd March 1926	45	7 15 3	6 8 6	7 8 5	..	..	..
8th March 1926	46	8 5 0	7 8 0	7 15 0	..	..	..
13th March 1926	46	8 4 0	6 9 0	7 11 0	..	..	..
19th March 1926	46	7 13 3	6 13 3	7 7 0	4 14 0	4 3 3	4 12 0
27th March 1926	28	7 5 6	6 8 0	6 14 0	4 11 6	4 10 6	4 11 0
28th March 1926	18	7 6 6	6 4 0	7 0 0	4 12 3	4 7 6	4 10 2
10th April 1926	33	6 14 9	6 2 6	6 7 7	4 8 0	4 4 6	4 5 10
11th April 1926	13	7 11 3	6 1 6	6 10 7	..	..	..
23rd April 1926	38	6 14 3	5 9 3	6 8 0	4 1 0	3 13 3	4 0 0
24th April 1926	7	6 14 6	6 2 6	6 9 7	..	..	..

The general reduction in rates, as the season advances, which was brought out in the village investigation, is verified by the above records. The rate at Bavla market for opening kallas and extracting kapas is approximately annas 9 per 60 lbs. ($1\frac{1}{2}$ maunds) of kallas. Taking this charge into consideration, the cultivator, selling kapas, in preference to kallas, gains 1-2 annas per maund on the above-quoted rates.

(13) *Deductions.*—The general recognised market deductions at Bavla market are as under :—

	Kapas. Rs. a. p.		Kallas. Rs. a. p.	
(1) Brokerage	0 1 6	per maund	0 1 0	per maund.
(2) Charity	0 2 0	per cart.	0 2 6	per cart.
(3) Panjrapol	0 2 0	,,	0 2 3	,,
(4) Water	0 1 0	,,	0 1 0	,,
(5) Labour heaping, etc...	0 2 0	,,	0 4 0	,,
(6) Weighing	0 2 0	,,	0 4 0	,,

These figures are approximate and vary slightly with the actual weight of the cart.

In addition, discount of 1 per cent. is taken if cash payment is made.

In addition to these recognised deductions, there are also deductions in weight and in money taken from the cultivators. Records have been taken of the weight of kapas or kallas which the individual said he had brought to market and of the weight which was finally accepted by the purchaser.

These records are tabulated herewith.

STATEMENT OF WEIGHT REDUCTIONS OF KAPAS AND KALLAS, WHEN WEIGHED, IN BAVLA MARKET AS COMPARED WITH WEIGHMENT AT VILLAGE.

Date.	Number of individuals recorded. Total.	Number of individuals recorded. With Reduced Weights.	Kapas. Maximum. In seers.	Kapas. Average. In seers.	Kapas. Number of records of reductions. Over 20 seers.	Kapas. Number of records of reductions. 10-20 seers.	Kapas. Number of records of reductions. Under 10 seers.	Kallas. Maximum. In seers.	Kallas. Average. In seers.	Kallas. Number of records of reductions. Over 20 seers.	Kallas. Number of records of reductions. 10-20 seers.	Kallas. Number of records of reductions. Under 10 seers.
2nd March 1926 ..	45	44	42	11.6	3	21	20	..	..	..	..	..
8th March 1926 ..	46	46	37	10.	14	23	9	..	..	..	..	..
15th March 1926 ..	45	45	36	12.6	9	20	16	..	..	..	..	..
19th March 1926 ..	46	46	30	12.3	3	16	11	31	11.5	4	8	4
27th March 1926 .	24	27	15	8.1	..	7	16	21	11	1	2	2
29th March 1926 ..	18	14	8·5	3.5	..	..	10	16	10.2	..	2	[illegible]
10th April 1926 ..	33	32	26	8.3	2	6	18	33	16.	1	5	..
11th April 1926 ..	13	10	24	10.9	2	3	5	..	..	..	..	..
23rd April 1926 ..	39	37	26	11.4	5	14	13	31	23.	5	..	..
24th April 1929 ..	7	7	22	15.6	2	4	1	..	..	..	..	..
	320	308	..	..	40	114	119	..	..	11	37	7

Thus, out of a total of 320 individuals recorded, 308 (96·2 per cent.) stated that the weight recorded in Bavla market and accepted by the purchaser was less than the actual weight they had brought to market. Of these 308, 51 (16.2 per cent.) lost over 20 seers, 131 (42·8 per cent.) over 10 seers but under 20, and 126 (41 per cent.) under 10 seers. In view of this, there would appear to be justification for the complaints recorded in the village investigation regarding fraudulent and faulty weighing at the market centres.

In Bavla market, deductions were also made, both in kind and in cash, during and after weighment. These deductions "kadado" were the result of disputes with regard to the quality of the produce.

Records of such deductions have been kept in the case of individuals recorded and are given below :—

On 3rd March 1926 :—Reductions of this nature were :—

	Re.	a.	p.	
(45 records).	0	6	9	per maund—2 cases.
	0	6	0	per maund—1 case.
	0	2	3	per maund—2 cases.
	0	2	0	per maund.
		+	$6\frac{1}{4}$	lbs. kapas—1 case.
	0	2	0	per maund—1 case.
	0	1	6	per maund—1 case.
	0	1	0	per maund.
		+	4	lbs. kapas—1 case.
	0	1	0	per maund—4 cases.
	8 lbs. kapas—1 case.			
	4 lbs. kapas—1 case.			

On 8th March 1926 :—13 cases of reduction ranging from Re. 0-1-3 (46 records.) to 0-6-0 per maund.

On 13th March 1926 :—13 cases of reduction ranging from (46 records.) Re. 0-1-3 to 0-4-3 per maund.

On 19th March 1926 :—8 cases of reduction Re. 0-1-9 to 0-8-0 (46 records). per maund also 6, 4 and 12 lbs. kapas.

On 27th March 1926 :—3 cases of reduction Re. 0-1-6, 0-2-6
(28 records). per maund and 7 lbs. kapas.

On 28th March 1926 :—No cases.
(18 records).

On 10th April 1926 :—6 cases of reduction Re. 0-1-0 to 0-3-3
(33 records). per maund.

On 11th April 1926 :—1 case of reduction Re. 0-1-3 per maund.
(13 records).

On 23rd April 1926 :—10 cases of reduction Re. 0-1-0 to 0-3-3.
(38 records). per maund.

On 24th April 1926 :—2 cases of reduction Re. 0-4-0 and 0-1-0
per maund.

These deductions, during or after weighment, are neither so frequent nor so heavy as in Khandesh or Berar and do not form the subject of general complaint on the part of the sellers. It is unfortunate that the investigators were not able to obtain similar records from other market centres in North Gujarat so as to give a wider idea of the marketing system and its difficulties in the tract under inquiry.

(14) *Advances.*—There is no record of any individual having taken an advance on kapas or kallas brought to market.

APPENDIX VI.

Oldham Master Cotton Spinners' Association, Ltd.

Spinning Tests of Indian Cotton, March, 1926.

Firm making Test.	Growth.	Per cent Loss up to Card Sliver.	Nominal counts.	Actual Counts at Spindle Point.	Lea Strength Test in lbs.	Actual Turns per inch.	Estimated Value compared with price of current Month Futures, Universal Standard. Staple.	Grade and Colour.	Working.	Nett Value.
No. 1.	*American Bowceds* ..	8·5	*Weft 25* *„ 24* *„ 25 hard.* *Twist 30*	*25·26* *24·31* *26·01* *30·77*	*54·0* *52·5* *57·0* *41·5*	*17·5* *16·25* *22* *23*	*40 on*	*40 on*	*20 on*	*100 on*
	Gadag No. 1	16·375	Weft 25 „ 24 „ 25 hard Twist 30	25·82 24·89 26·06 30·84	53·4 54·3 58·6 44·8	17·5 16·25 22 23	40 on	60 off	20 on	pass.
	American Bowceds ..	8·5	*Weft 28* *„ 26* *„ 25* *„ 30*	*28·37* *26·00* *25·23* *30·08*	*54* *57* *61* *43*	*22* *23* *17·5* *19*	*40 on*	*40 on*	*20 on*	*100 on*
	285 F (*Punjab-American.*)	13·5	Weft 28 „ 26 „ 25 „ 30	29·04 26·32 24·75 30·08	60·3 74 72 49	22 23 17·5 19	80 on	30 off	300 off	250 off
No. 2	*American Texas* ..	*9·56*	*Twist 30* *„ 24*	*28·87* *22·68*	*57·75* *76·75*	*20·3* *17·18*	*80 on*	*30 on*	*25 on*	*135 on*
	1027 ALF (Surat) ..	12·37	Twist 30 „ 24	31·37 24·31	41·75 66·75	20·3 17·18	40 on	30 off	25 on	35 on

Oldham Master Cotton Spinners' Association, Ltd

Spinning Tests of Indian Cotton, March, 1926—contd.

Firm making Test.	Crowth	Per cent Loss up to Card Sliver	Nominal counts.	Actual Counts at Spindle Point.	Lea Strength Test in lbs.	Actual Turns per inch	Estimated Value compared with price of current Month Futures, Universal Standard.			
							Staple	Grade and Colour	Working	Nett Value
	M.? American	10 12[illegible]	Twist 12¼	12 88	129 5	13 35	35 on	pass	pass	35 on
			" 16	10 93	95 25	15				
			Weft 11	11 78	108 25	10 8				
			" 12	18 01	70 75	13 5				
	Surat 1[illegible] ..	1st Test 23 3[illegible]	Twist 12¼	13 74	132 5	13 8	25 on	175 off	pass	150 off
			16	17 77	100 12	15				
			Weft 11	12 39	130	11 65				
			17	18 35	98 37	13 30				
		2nd Test [illegible] 25	Twist 12¼	12 34	146	13 85				
			16	16 25	110 12	15 15				
			Weft 13	12 80	137 23	11 25				
			" 16	16 50	103 5	12 50				
	Surat 2[illegible]	1st Test 11 17[illegible]	Twist 11¼	12 31	126 5	12 65	pass.	50 off	pass.	50 off
			" 15¼	16 05	92 02	14 65				
			Weft 10	10 04	111 5	11 15				
			" 16	17 20	84	12				
		2nd Test 12 12[illegible]	Twist 12¼	12 88	123 5	12 75				
			" 16	17 65	81 02	14 05				
			Weft 12	11 21	112	11				
			" 16	17 50	73 25	12 10				
	Universal M[illegible] [illegible]	[illegible]	Weft 24	24	8 73	10 77	20 on	pass	pass	20 on
	[illegible] No. 1	12[illegible]	" 22	21 0	61 75	17 0				
			Weft 30	20 9	53 75	22 2				
	[illegible]		24	24 84	54 75	10 3	15 on	pass	10 on	25 on
		11 [illegible]	20	20 0	70 25	16 6				
			Weft 24	23 15	51 75	19 9	pass	170 off	50 off	200 off
			" 22	21 [illegible]	60	10 1				

TESTS ON INDIAN GROWN COTTON.

March 1926.

SPINNERS' COMMENTS. NO. 1 FIRM.

—	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Gadag No. 1 ..	1 1/16	Shy of Mid. Am.	Cream.	Good.	If a whiter strain could be cultivated and leaf and seed kept out in greater degree, this cotton would make an excellent substitute for S.M., Boweds.	Worked well.	Will spin counts up to 30's. Strength slighty better than Boweds, Colour and Cleanliness inferior to Mid. Boweds. Resultant yarns contained more neps and bits of seed, and was not so level as American with which it was compared.
285F (Punjab-Am.)	1 3/16	About equal to Mid. Am.	Light Cream.	Good but too many stain spots.	Too full of minute pieces of seed with hairs attached which ruin the evenness and appearance of the yarn.	Worked well.	The yarn from this cotton is very disappointing. Nep is much more prevalent than would appear likely, looking at the cotton in the bale. The fault is very pronounced on web of card. The side shaft and barrow wheels on card were altered so that effect could be noted, but no improvement resulted. Three cards were tried but the result was the same in each case.
					NO. 2 FIRM.		
1027 ALF(Surat)...	1 1/16	Leafy.	Creamy.	Unsatisfactory.—Leafy in patches, 2" in diameter.	The leaf seems to hang in patches, but with a good cleaning plant can be separated with success.	The behaviour during carding and spinning was very good, but was considerably softer than the Texas cotton spun at the same time.	Anything over 30's will, in our opinion, begin to show the Indian cotton 1027 ALF to disadvantage. The strength will be seen to be about 11 lbs. below the test from American cotton of Texas growth. Growths of cotton other than American, do not generally command the same price when the staple and grade are considered equal.

TESTS ON INDIAN GROWN COTTON.

March 1926.

	Spinners Comments No 3 Firm						
	On the Raw Cotton						
	Staple (Ins.)	Seed and Leaf	Colour	Ginning	Generally	On Behaviour in Working	On the Yarns Produced
[illegible]	[illegible]	Highly charged with broken leaf and seed	Dull Cream	Badly ginned Good cotton spoiled	Diameter of fibre fine Natural twist very low Nature of fibre firm and sound very strong	Works very well in carding and spinning but will not stand much twist or drag. Spins tight and compact	This cotton would spin 28/34 Weft or 30/32 Twist more suitable for Twist Stronger than American is much darker in colour and carries considerably more leaf Would estimate its market value at ½d per lb under yarn made from American much depending upon the purpose it was used for
[illegible]	[illegible]	[illegible]	Creamy	Moderate—could be improved	Diameter of fibre moderate Natural twist moderate Nature of fibre pliable	Works very well with same twist and speed of machinery as American	Would spin a good 32 34 Weft and 20/28 Twist Strength equal to Mid Amer Colour is creamier with slightly more leaf in the yarn We would say that yarn would be worth ½d per lb under the American quality much depending on the purpose it was used for

TESTS ON INDIAN GROWN COTTON.

March 1926.

SPINNERS' COMMENTS. No. 4 FIRM.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Cambodia No. 1 ..	Full 1	Beautifully clean, almost free from leaf and seed.	Beautiful creamy white.	Very good indeed.	Very fine silky texture, and good spinning cotton up to 30's counts. Nice staple, good creamy white, bright and clean, not too lossy in spinning processes. Staple very regular. A good substitute for Amer. Boweds except a little too creamy.	Good spinning cotton. Equal to Universal Mid. Boweds Amer. in spinning, but not in colour; required less twist than Dharwar or Universal Mid. Boweds.	Colour rather creamy, but bright and nice lustre. Thread moderately level and free from nep, fairly clean. Strength not quite so good as Amer. Boweds. A marketable yarn up to 30's counts.
Dharwar No. 1 ..	1	Much broken leaf and seed, also much sand.	Dull heavy creamy colour which is objectionable.	Not satisfactory, too much broken leaf, seed and sand.	Rather fine silky texture; spins fairly well up to 24's counts. Nice staple. Its bad colour, broken leaf seed and sand are very objectionable, making the cotton very lossy in spinning process. Staple very regular, but not fit to substitute American Boweds owing to the above faults.	Spins fairly well but makes far too much loss in sand and leaf. This cotton requires more twist than Cambodia or Universal Mid. Boweds American.	Dull brown colour. Thread rather unlevel in 24's counts. Moderately clean, lacking lustre and free from nep. Strength not quite so good as Amer. Boweds. A marketable yarn up to 24's counts.

SPINNING TESTS OF INDIAN COTTONS.

May 1920.

Firm making Test	Crowth.	Per cent. Loss up to Card Sliver	Nominal Counts	Actual counts at Spindle Point	Lea Strength Test in lbs.	Actual Turns per inch	Estimated Value compared with price of current *month Futures, Universal Standard.* Staple	Grade and colour	Working.	Nett value
A.	Good Mid American Texas ..	Per cent 8	Twist 30	37	44 25	22.70				
			Weft 38	39 8	41 00	20 67				
			Weft 40	41	39 75	21 45				
	285 F Punjab American	14 09	Twist 30	35 4	49 25	23 17				
			Weft 38	37 45	49 25	21 9	130 on	Pass	75 off	55 on
			Weft 40	39 2	45 00	22 05				
B	289 F Punjab American	14 75								
C.	Mid American 1 3/16"	10 15	Ring Twist 32		56	23 3				
	285 F ..	10 66	" " 32		55	23 3				
	289 F Punjab American	10 00	" " 32		60	23 3				
D	American ..		Weft 28	29 00	37½	18				
	Georgia		Weft 24	26 16	45	17				
	285 F Punjab American	13 9	Weft 28	30 33	48½	18				
			Weft 24	27 04	59	17				
	289 F Punjab American	18 4	Weft 28	32 24	47	18				
			Weft 24	27 07	58½	17				
E.	285 F. ..	12 5	Twist 24	22 6	71	17 58				
			Twist 40	34 7	54 5	20 88	V Good	S Low Mid Fair colour	Good	50 on.
			Weft 40	38 2	42 5	20 9				
			Twist 28	25 0	65 4	19 4				
	289 F ..	14	Twist 26	25 01	67 3	19 4				
			Weft 30	33 1	51	19 3	Good	Middling	Good	50 on
			Weft 30	27 9	57.6	19				
			Twist 26	24 2	68 5	19 4				

TESTS ON INDIAN GROWN COTTON.

Spinners' Comments.

	Staple (Ins).	On the Raw Cotton.				On Behaviour in Working.	On the Yarns Produced.
		Seed and Leaf.	Colour.	Ginning.	Generally.		
285 F (Punjab American).	Full 1 1-8" to 1 3-16". ..	Large amount ..	Dull Cream..	A. FIRM. Could be improved.	Silky texture, fibre very strong.	Works very well in carding and spinning, requires much less twist than American Texas.	Would spin 46' to 48's weft or 38's *to 40's twist*; more suitable for twist yarns. Thread fairly level, a little nep showing in our opinion through faulty ginning.
289 F (Punjab American.)	1 5-16" dia. x fine.	Too much leaf and seed.	Dull Cream	B. FIRM.	Twist good but tests only taken up to Intermediate bobbin.	....	We think would spin 54's to 70's Twist yarn under proper conditions and with better ginning.
285 F	1 1-8" ..	....	All practically alike but American has less lustre.	C. FIRM.	....	Difficulty with 285F—Fibres falling away apparently less natural twist.	The American is easily the cleanest and most even yarn. The two Indian cottons are similar, both are uneven, very neppy indeed with plenty of leaf still showing.
289 F (Punjab American.)	1 1-8" ..	....	....	....	....	No trouble.	
285 F (Punjab American).	1 3-16" ..	Equal to Mid. American.	Light Cream	D. FIRM. Good .	Contains a large amount of stain.	Worked well	Very much finer counts can be spun than here reported upon but excessive nep seriously prejudices the value of this cotton.
289 F (Punjab American).	1 3-16" ..	Equal to Mid. American.	Light Cream	Good ..	Rather dirtier than 285.F but not so many stains.	Good	Do.
285 F (Punjab American).	....	....	....	E. FIRM.	....	....	
289 F.	....	....	....	....	....	....	Compares very favourably with American Boweds for Weft yarns being bright and of good colour and staple. Quite up to staple Boweds, suitable for 40's weft. More suitable for Twist yarns, being longer in staple than Boweds and equal in strength to Good 1 1-8" Texas. Suitable up to 36's Twist.

APPENDIX VII.

Annual Report of the Director, Institute of Plant Industry. Indore, for the Year Ended June 30th, 1926

I. Introduction

The second meeting of the Governing Body took place at Indore on October 9th, 1925, when the budget for 1926-27 was passed and proposals for the expenditure of the balance of the capital grant of Rs 2,00,000, namely Rs 20,851 were discussed To this balance of Rs 20,851 saving from the ordinary budget for 1925 26, namely Rs 29,888 were added making a total sum of Rs 50,739 available for capital expenditure The general lines on which the remainder of the capital should be expended were settled at the meeting and the Director was instructed to prepare detailed plans and estimates which were afterwards circulated and approved. Orders were at once placed and most of the work has been completed Before the end of the rains of 1926 it is hoped to prepare the final statements of capital expenditure and to close this account

II. Erection of Buildings and Laying Out the Land

The whole of the Institute and farm buildings including one block of workmen's quarters and two chaukidars' houses have been completed and fitted up The gin house will be handed over in a few days

The electrification scheme of the Institute and of the various cotton gins has been completed with the exception of connecting on to the motors which are shortly expected The scheme entailed the erection of 3,580 feet of mains Half the cost of the mains used in common was contributed by the Daly College

Two large pucca wells, each over 20 feet in diameter, were completed during the year Both have behaved well in an exceedingly dry season when many of the local wells ceased to give water early in the hot weather These and one of the old wells are being provided with Boulton Elevators driven by a portable 5 H P oil engine and will prove of great use in irrigation work on cotton In addition to these wells there are three more old *pucca* wells in the area which can be deepened, improved and brought into use in future years as funds and time permit

A bullock gear which drives the threshing machine, corn grinder and chaff cutter has been erected and is now in use.

The additions and alterations to the old Thagi jail have been completed at a cost of Rs. 3,000. Four large married quarters, six quarters for bachelors and four out-houses for menials have been provided which are now being occupied by members of the staff and by the research students. The jail compound has also been handed over to the Institute free of rent. This is now being fenced and will provide a useful grazing area for the work cattle. A second grass paddock has been handed over to the Institute for grazing purposes free of cost. These two areas have already proved of great use in providing fodder for the work cattle.

The plan of the final lay-out of the area was completed during the rains of 1925 and the position of the plots, roads and paths marked by permanent stone pillars. This work was carried out by Mr. K. R. Joshi, Assistant in charge of Field Experiments and of the Seed Farm, under the supervision of Rai Sahib J.N. Bose of the Railway Survey and his staff. One of the members of the Railway Survey staff (Mr. Ball) prepared the final plan which has been of the greatest use. A beginning was at once made with the actual lay-out and at the time of writing (June 30 1926) this is rapidly approaching completion. The work has involved the construction of 6,965 feet of metalled roads, 1,260 feet of metalled paths, four small bridges, four culverts, 4,530 feet of small drainage canals, 34,395 feet of surface drains, 13,149 feet of earth roads and the erection of 25,650 feet of fencing. About 4,500 feet of fencing, about half a mile of earth roads and two short pieces of metalled road remain which will be taken on hand this rains as soon as the sowing of the *kharif* crops has been completed.

III. Cotton Investigations.

A survey of the work on Indian cotton published during the last twenty years reveals the important fact that with the exception of the pioneering work of Sampson and Clouston (which appeared many years ago) and the recent work of Roberts at Khanewal and of the Bombay Agricultural Department at Surat very little attention has been paid to the agricultural aspects of this crop. Almost without exception, recent investigations have been confined to the

discovery of better cottons, to seed distribution and to various cotton pests. A short experience of cotton growing on the black soils has convinced me that there is a large and profitable field of investigation in the actual growing of cotton on these soils in addition to the investigations on botany, physiology and genetics of this crop which form the main work of the Institute. Attention has therefore been paid to the growing of cotton and actual results are beginning to appear. In this way it will be possible for the Institute to pay dividends in the early years of its existence while the researches on the improvement of the plant are being developed.

The improvement of cotton growing.

The eradication of kans and the deep cultivation of black soils.

One of the chief obstacles to cotton growing in Central India, Bundelkhand and parts of the Central Provinces is a perennial deep rooted grass known as kans (Saccharum spontaneum). At a conservative estimate the reduction in the yield of cotton caused by this weed is at least a third of the crop. The implements at the disposal of the cultivator only serve to keep kans in check, they do not eradicate it. Attempts are now being made in various parts of India to bring this weed under control by means of tractors but the method is expensive and not very suitable for the ordinary villager. As more than half the area of the land leased to the Institute was infected with *kans* and quite unfit for experimental work, the eradication of this pest was at once taken up. The funds available were insufficient to consider either the purchase of a tractor or the local method of digging out the weed by hand. Some cheaper method had to be devised. The first attempts were made with heavy soil-inverting ploughs :—Ransomes' steel bar plough and the C.T. plough were tried each drawn by two pairs of oxen. The results were unsatisfactory and the amount of work done each day was small. The failure of these ploughs was partly due to the great force needed to turn a deep furrow and partly to the fact that when two separate pairs of oxen are yoked to the same plough there is a good deal of non-co-operation and the animals rarely pull together. A little consideration of the problem soon led to the conclusion that furrow inversion—so essential in the damp soils of the Occident for killing weeds by cutting off the light—is quite unnecessary in India where the sun does the same work for nothing once the weeds are uprooted.

Soil inversion besides requiring a large amount of draught interferes with levels and is particularly harmful on black soils by producing large clods which often prevent the work cattle from walking on the cultivated surface. These difficulties were overcome by the use of an adjustable *bakhar* capable of working to a depth of 8 to 9 inches drawn by *two pairs of oxen working abreast.* This *bakhar* was obtained by dismantling and slightly altering the P. & O. 10 inch ridging plough manufactured by the International Harvester Company and on sale in India at forty rupees each. The broad share of this plough acts as a very efficient *bakhar* blade. The draught is supplied by four oxen walking abreast provided with a long yoke, nine feet four inches long by one foot seven inches deep fitted with iron pins which prevent the oxen getting off the yoke when turning. Under this system non-co-operation disappears; the animals work together and exert their maximum power. The arrangement will be clear on referring to the photograph appended* to this report. This adjustable *bakhar* is proving very effective in *kans* eradication and this adverse factor is rapidly being eliminated. The most effective periods for dealing with this weed appear to be during the time of active growth in the rains or at the beginning of the cold weather.

The adjustable *bakhar* drawn by four bullocks walking abreast is all that is required for the occasional deep cultivation of black cotton soils. More expensive machinery does not appear to be necessary, and in future any well-to-do cultivator can obtain all the benefits of a tractor, without any of the disadvantages of this costly and uncertain machine, for the trifling sum of forty rupees. The complete ridging plough will also be useful in growing cotton on flat beds in tracts where the provision of a little surface drainage is found to increase the yield.

Soil colloids and the growth of the cotton plant.

Observation of the cotton crop on the black soils suggests that the formation of soil colloids during the rains is the principal factor which retards growth and limits the yield. This is particularly the case in years of heavy rainfall when growth is very slow, the plants are stunted, the yield is low and the bolls open late. At present the grower is at the mercy of the rainfall and the yield is a

* Not printed.

matter of chance. What is wanted is to furnish the cultivator with some weapon by means of which the position can be partly or entirely reversed. Perhaps the easiest way of dealing with this problem is to apply a small dressing of a suitable oil cake *in a finely divided condition* which will tend to put the colloids out of action and also supply nitrogen in a readily available condition. *Karanj* cake, a local oil-cake obtained from the seeds of a leguminous tree (*Pongamia glabra*) applied at the rate of five maunds per acre has greatly improved the vegetative growth and increased the yield of cotton by more than 25 per cent. The effect on the crop of small dressings is much greater than would be expected from the chemical composition. Crushing in an ordinary mortar mill reduces this cake to the requisite fine state of division. Plantations of this tree have been started at Indore so as to determine the yield of seed per acre and the increased cotton crop which can be obtained. The seed contains about one-third of its weight of oil which is being examined by Dr. Simonsen at the Indian Institute of Science, Bangalore, with the object of stimulating the trade in this product. It is likely to be suitable for lubrication and for the manufacture of soap. There seems little doubt that a small plantation of this tree will be sufficient to provide manure for a comparatively large area of cotton and that it will pay the cotton grower to devote attention to this valuable species. In many parts of the black soil tracts there is ample land for the purpose.

The preparation of organic matter for the cotton crop.

One of the directions in which the yield of cotton can be markedly increased is to supply the soil with fermented organic matter in a finely divided condition. These matters have already been worked out empirically in China and Japan and are described in King's *Farmers of Forty Centuries*. All that is needed is to apply this work to Indian conditions and to make use of all existing raw materials. Almost any form of organic matter is suitable for the purpose. All that is needed is to mix the material with earth, ashes (when available), a little cowdung (to start the fermentation in the right direction) and water. The final result is a finely divided manurial earth rich in nitrogen and organic matter. Fresh *san* hemp has yielded a promising product containing 0·97 per cent. of nitrogen which is now being applied to cotton. Water

weed from the local river gave similar results, the compost in this case containing about 0·5 per cent. of nitrogen. The experiments with cotton stalks are not yet complete. All the weeds and refuse organic matter produced on the Experiment Station are now as a matter of routine converted into valuable manure and in due course find their way to the cotton fields. There is at present a serious waste of manure going on in India due to the fact that raw unfermented materials are applied to the soil. This practice is incorrect. The soil cannot prepare food materials and grow a crop at the same time. To attempt to make the soil do so is to overwork the land. The Chinese discovered the secret of avoiding this common mistake. They never overwork their fields and confine their activities of the soil to its proper function, namely, that of growing a crop. The preparation of food materials for the plant is always done outside the field. The successful introduction of this principle into Indian Agriculture would lead to a great increase in the production of cotton. As results accumulate on this subject at Indore, they will be published.

The improvement of the cotton plant.

During the season of 1925 about 80 acres were sown with *Malvi* cotton obtained from Kannod in the Nimawar District of the Indore State. Although the total rainfall was only 15 inches the yield was satisfactory and there seems no doubt that this mixture will well repay detailed study. The various constituents have been isolated and will this year be grown from single plants. The increase in the length of fibre above the mean of the mixture which can be obtained by selection methods is not likely to be considerable. The possibilities in improvement of the yield per acre and in the fineness of the fibre, however, are considerable.

Besides the work on *Malvi* a beginning has been made in the collection of unit species of the indigenous Indian cottons a number of which have been sent in by the Agricultural Department. At the present time the area under small cultures in connection with the plant breeding and selection work is nearly six acres. This includes 1,252 single plant cultures. Among these are a number of *bani* cultures, a variety which grows well at Indore and which is now being studied.

In 1927 and succeeding years the culture work will be divided into two groups (1) rains cottons and (2) cottons suitable for growth

under well irrigation In this way the range of types available for study will be greatly increased and it will be possible to include American varieties

IV RESEARCH STUDENTS

At the present time three Research Students (Messrs Bapubhai Desai, Idnani and Talesara) appointed by the Central Cotton Committee are working in the Institute Two of these students hold ordinary research scholarships while Mr Bapubhai Desai has just been appointed to a Senior Scholarship Messrs Idnani and Talesara worked in the Institute as volunteers without pay up to June of this year and I am glad to report that they are making good progress and promise well

V PUBLICATIONS

In the Presidential Address to the Indian Science Congress which met at Bombay in January 1926 an attempt was made to define the nature of the problems which await solution by the Agricultural Department and to deal with the drawbacks of specialisation in research work The examples selected to illustrate the main theme of the paper were canal irrigation and disease in plants, two questions which are intimately connected with the research work undertaken by the Indian Central Cotton Committee Some suggestions were made as to the best method of approaching present day problems, a matter which bears on the selection of scientific workers for cotton investigations in India and on the training of research students Copies of this paper are appended to this report

Two short notes were published in the *Agricultural Journal of India* on the composting of organic matter and on the origin of alkali land

A short paper black soils was read at the Ir nd included in the bulletin rece Committee This paper is being reprinted in the *Agricultural Journal of India*

A HOWARD,

Director, Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India

Supplement to the Annual Report for the year ended June 30th, 1926.

In submitting the last annual report it was mentioned at the meeting of the Central Cotton Committee in July 1926 that a supplementary report would be desirable on one or two points. This was due to the fact that insufficient time had elapsed between the completion of the experiments and the writing of the report. I am glad to report that no qualifications are necessary and that the results in question namely, those on the eradication of *kans* and on the new method of green manuring for cotton are even more successful than I had hoped.

There is no doubt that the new four bullock yoke and the deep subsoiler, which have been devised at the Indore Research Institute, constitute a notable advance in Indian Agriculture which will soon be taken up all over the country. The complete outfit was shown at work at the recent Agricultural Exhibition at Poona and attracted much favourable notice. A paper on the subject was also read before the Agricultural Section of the Indian Science Congress at Lahore. So far orders for 22 complete outfits have been received. In addition, orders have come in for 11 yokes. A note on this subject with an illustration* of the yoke and new plough is appended.

As regards the new method of green manuring with *san* which has been worked out at Indore, the cotton on the experimental plots has not yet been completely picked. The weight of the crop so far gathered, however, leaves no doubt as to the great value of the method. I hope to have all this in print shortly and to append a paper with full details to the annual report for the year ended June 30th, 1927.

A. HOWARD,

Director, Institute of Plant Industry, INDORE.

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* Not printed.

THE ERADICATION OF KANS (Saccharum spontaneum L.).

By Albert Howard, C.I.E., M.A.,

Director, Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India.

One of the chief obstacles to the growth of cotton and other crops in Central India, Bundelkhand and parts of the Central Provinces is a perennial deep-rooted grass known as *kans* (*Saccharum spontaneum* L.). At a conservative estimate the reduction in the yield of cotton caused by this weed is at least a third of the crop. The implements at the disposal of the cultivator only serve to keep *kans* in check, they do not eradicate it. Attempts are now being made in some parts of India to bring this pest under control by means of tractors but the method is expensive and not very suitable for the ordinary villager.

As more than half the three hundred acres leased to the Institute of Plant Industry were infested with *kans* and quite unfit for experimental work, the eradication of this weed was at once taken up. The funds available were insufficient either to consider the purchase of a tractor or to adopt the local method of digging out the weed by hand which costs about eighty rupees an acre. Some cheaper method therefore had to be devised.

The first attempts were made with heavy soil-inverting ploughs —Ransomes' steel bar plough and the C. T. plough were tried, each drawn by two pairs of oxen in the usual manner. The results were unsatisfactory and the amount of work done each day was small. The failure of these ploughs was partly due to the great force needed to turn a deep furrow and partly to the fact that when two separate pairs of oxen are yoked to the same plough there is a good deal of non-co-operation and the animals only occasionally pull together. A little consideration of the problem soon led to the conclusion that furrow-inversion—so essential in the damp soils of the Occident for killing weeds by cutting off the light—is quite unnecessary in India where the sun does the same [illegible] weeds are loosened or uprooted. Soil-inv[illegible] large amount of draught interferes with le[illegible]armful on black soils after the rains by producing large clods which prevent the work cattle from walking on the cultivated surface.

These difficulties were overcome by the use of an adjustable *bakhar* capable of working to a depth of 8 to 9 inches drawn by two pairs of oxen *walking abreast.* This *bakhar* was obtained by dismantling and slightly altering the P. & O. 10-inch ridging plough manufactured by the International Harvester Company and on sale in India at forty rupees. The broad share of this plough when the wings and sole are removed acts as a very efficient and self-cleaning *bakhar* blade and uproots the dense mass of *kans* rhizomes which run mostly in the upper eight inches of soil. The depth of working is adjusted by the front wheel. The yoke is attached to the sub-soiler by a strong chain of suitable length. The draught is supplied by four oxen walking abreast provided with a long yoke, nine feet four inches long by one foot seven inches deep fitted with iron pins which prevent the oxen getting off the yoke when turning. Under this system non-co-operation disappears, the animals work together and exert their maximum power. One of these sub-soilers will plough an acre of land a day at Indore at a cost of somewhat below five rupees. This adjustable *bakhar* is proving very effective in *kans* eradication at Indore and this adverse factor is rapidly being eliminated. Plots infested with *kans* in September 1925 were fit for cotton cultures by June 1926. The most effective periods for dealing with this pest appear to be during the time of active growth in the rains or at the beginning of the cold weather but this and many other matters relating to this weed need further investigation.

The adjustable *bakhar* drawn by four bullocks walking abreast is all that is required for the occasional deep cultivation of black cotton and other Indian soils. More expensive machinery does not appear to be necessary and in future any well-to-do cultivator can obtain, for the trifling sum of forty rupees, all the benefits of a tractor or steam plough without any of the disadvantages of these costly and uncertain machines. The deep cultivation involved in the eradication of *kans* produces other useful results. The land becomes remarkably free from weeds and the cotton crop is considerably benefited. The complete ridging plough is also proving very useful at Indore in growing cotton on flat beds separated by furrows. The additional surface drainage so provided is followed by better root-development and by increased growth.

APPENDIX VIII.

Institute of Plant Industry, Indore.

Programme of Future Work.

The programme of cotton investigations submitted to the Central Cotton Committee in 1923 is given below :—

The aim of the Indore Institute (as regards cotton investigations) is to provide a centre of research for the black soil tracts. At this centre any problems suggested, either by the Central Cotton Committee or by other workers in India can be taken up. A special effort will be made to create a good library dealing with the various aspects of cotton production for the use not only of workers at the Institute itself but also of other investigators on cotton in India.

While the Institute will always be prepared to consider any useful suggestions as regards problems to be investigated, the following preliminary programme is put forward. This falls into four parts.

(*a*) *Botanical Survey.*—Up to the present, little or no attempt has been made in India to isolate, classify and study the unit species which form the frame work of the various species and varieties of cotton found on the black soils. It is true that the Indian cottons have been classified and surveyed from the point of view of systematic botany, but this is entirely inadequate for modern work as by this method cottons of very different agricultural value are not distinguished. The work needs to be carried much further and nothing short of the isolation and study of the unit species will meet the case. This work has a direct practical bearing. It will, in all probability, lead to the isolation of useful types for distributions. It will also provide material for the plant breeder and for critical work on the physiology and agronomy of cotton.

(*b*) *Plant Breeding.*—Two main practical problems will be taken up at once :—

(1) the creation, establishment and maintenance of an island of long staple cotton on the Malwa plateau. The types

isolated will be available for other areas in India and the crop will enable a grade of improved cotton to be established for the mills and for the shippers;

(2) the improvement of the fibre of the hardy Roseum type which is, in all other respects, admirably suited for the low-lying areas of Central India.

In the solution of these questions the inheritance of characters will have to be studied. The results will apply not only locally but will also be of general interest.

(c) *The Physiology of the Cotton Crop.*—In order to increase production something more than improved varieties is needed. The new varieties must be provided with suitable conditions for growth. To discover these the physiology of the cotton plant must be studied and the factors which now limit production must be determined. This involves the study of root development, the relations of the root system to the soil type and the influence of factors such as soil moisture, soil aeration and drainage, soil texture and soil temperature on growth. Included in these studies is the discovery of factors which produce the shedding of buds, flowers and bolls. During the course of these physiological studies, the general nutrition of the cotton plant will be considered and how far the yield can be improved by manuring and other methods of soil treatment.

(d) *The Influence of Environmental Factors on the Lint Characters.* Modern industries demand a uniform product. Once this is obtained the purchase of raw material as well as the details of manufacture are simplified. In the case of cotton, any tract which can produce uniform lint will rapidly establish its reputation in the trade. It is well known, however, that the cotton fibre alters in character according to the soil on which it grows and to some extent according to the season. Further work is desirable on this matter with the object of discovering what factors bring about these changes, which varieties are most easily affected and whether any practical remedies exist for improving the uniformity of the fibre of the same cotton. This portion of the work is of direct bearing on the question of the maintenance of grades of cotton for the highest class of spinning in this country.

APPENDIX IX.

Technical note on the various provincial research schemes financed by the Indian Central Cotton Committee.

Bombay Research Schemes.

The three officers in charge of the investigations and some of the technical assistants have been placed on special duty by the Government of Bombay, their salaries being met from the Committee's grants and their substantive posts temporarily filled by departmental promotions. The other members of the staff have been employed on short term contracts.

Surat Physiological and Entomological Research Schemes.—These two schemes are closely related. The object of the former is a study of bud, flower and boll shedding and of means for reducing the consequent loss of crop. As the *Earias* Bollworms are responsible for a considerable amount of shedding it is convenient to discuss the two schemes together. It has been ascertained that of the total flower buds produced only some 10 per cent. yield mature bolls and that of the flowers that actually open only about 40 per cent. result in mature bolls. It has also been shown that successful flower and boll production is limited to a comparatively short period. Thus in 1924 flower buds were formed from September 1st to December 30th but only during a period of about seven weeks from the end of September did any material production of flowers (30 per cent. of the buds) take place. Similarly flowers which opened after the end of December produced an insignificant proportion of bolls. During the active period of flower production about 50 per cent. of the flowers produced mature bolls and over the whole flowering period about 43 per cent. It appears that the *Earias* Bollworms are responsible for a loss of about 30 per cent. of flower buds which only represents one-third of the total shedding. On the other hand a loss of 30 per cent. of flowers and bolls from this pest is distinctly significant. Further work is in progress from which it is hoped definitely to ascertain the loss which takes place when normally grown cotton plants are protected from *Earias* attack. The physiological work has definitely shown that shedding is not due either to disease or to defective pollination of the flower. Climatological data including rainfall, humidity, air and soil temperatures, evapora-

isolated will be available for other areas in India and the crop will enable a grade of improved cotton to be established for the mills and for the shippers;

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SIND.

The Lloyd Barrage canal system eventually will revolutionise cotton growing in Sind as perennial irrigation will replace the present uncertain water supply from inundation canals and a large additional area will come under irrigation. It is estimated that the irrigated cotton area will reach eventually some 700,000 acres. In consultation with the Indian Central Cotton Committee the Government of Bombay has provided a new research station at Sakrand for the investigation of the many problems arising from this radical change in the agricultural system of Sind. The station is provided with a perennial water supply by pumping from a lake thus enabling canal conditions to be reproduced in advance of the completion of the Barrage canals. The Indian Central Cotton Committee has given a grant of Rs. 20,000 per annum for a period of five years to provide a plant physiologist, staff and equipment for research on cotton physiology which they believe to be of extreme importance to cotton-growing in new canal areas. The staff has not yet been appointed.

MADRAS.

Herbaceum Botanical Research Scheme.—This scheme provides for plant-breeding work on the Herbaceum constituent of the various Madras cottons especially of the Northerns and Westerns type. (Many Madras cottons are mixtures in varying proportion of G. Indicum, G. Herbaceum and natural crosses.) The types under study have a particular value for those areas where the rainfall is low or uncertain and work has been directed to the study of " Unit species " and the isolation of strains of superior staple by pure line selection. During the current season some strains will reach the field test stage. The staff for the scheme has been partly obtained on deputation from the Madras Department of Agriculture and partly on short term contracts.

Pempheres and Physiological Scheme.—This scheme, work on which will start very shortly, provides for a Physiological Botanist and a Biochemist with botanical, chemical and entomological assistants for the study of a group of problems. Work on bud, flower and boll shedding has been carried to a certain stage by the Cotton Specialist to the Madras Government in the course of other work and the results published; this work will be continued and extended.

(2) The cotton stem weevil, "*Pempheres affinis,*" threatens to be a limiting factor on cotton production at Coimbatore and there is a risk of its becoming a major pest in other parts of India. The life history has been worked out already but no direct control measures appear possible. An important line of enquiry is the resistance to attack and power of recovery shown by certain strains of cotton, and investigations from both the botanical and chemical aspect have been arranged for. Concurrently certain further entomological data will be collected with special reference to the utilisation of the Madras Pest Act against this insect. The staff for this scheme is now being recruited.

United Provinces.

The Pink Bollworm is by far the most important insect pest of cotton in many parts of India, and is most destructive in the United Provinces and the adjoining part of the Punjab, where, as in Egypt, long cycle larvæ are responsible for most of the carry-over from season to season. The Government Entomologist, United Provinces, had already made this a major item of his research programme. The Indian Central Cotton Committee provided two non-recurring grants in the first instance to provide insect-proof cages, and subsequently a recurring grant and a further non-recurring grant, for special experiments in seed control and disinfection. An additional grant has recently been sanctioned to enable an additional Entomologist (one of the Committee's Research Students) to be employed for the further development of this work. The preliminary results obtained indicate that the loss of crop is at least 20 per cent. whilst the crop that is secured is very seriously lowered in quality. It has been calculated that effective control of the pest would add anything from 25 to 60 per cent. to the cash value of the crop. Results indicate that seed treatment alone would enable a very considerable reduction in the bollworm population to be effected provided that such treatment can be organised on sufficiently extensive a scale. Field experiments to confirm this result are now in progress and further data on flight distribution are being accumulated. The practical point to be determined is whether the treatment of all cotton-seed (in the ginneries) would be sufficient or whether the compulsory removal of the old cotton crop before a certain date is also essential. Legislation may be necessary eventually and it is of the utmost importance that the scientific data should be complete.

PUNJAB.

Botanical Research Scheme.—The earlier work of the Punjab Agricultural Department has led to the establishment in that province of nearly a million acres of Punjab-American cotton (acclimatised Upland American) of about 1" staple grown with canal irrigation and producing some 300,000 bales of cotton annually. This is the largest single addition to the Indian supply of medium-stapled cotton. The whole area is canal-irrigated and the average yield relatively high. The area for the current year is 1,066,000 acres and the estimated yield 328,000 bales.

Various difficulties in regard to both yield and quality in certain years led the Indian Central Cotton Committee to the conclusion that a special cotton research staff was required to deal with the various problems of American cotton-growing under canal colony conditions. A non-recurring grant of Rs. 29,300 was made which provided a special field laboratory and apparatus. The recurring grant of Rs. 45,000 provides for the Cotton Research Botanist, Botanical Assistants and for laboratory contingencies. The Punjab Government have provided a special plant-breeding area on the Agricultural College estate and a farm of 200 acres for testing and multiplication of strains and for field experiments. The Punjab Government have also provided a gazetted agricultural officer as Chief Assistant to the Cotton Research Botanist and meet all cultivation charges. They have also provided a good deal of the initial expenditure connected with the scheme. An exception has been made in this instance and the Cotton Research Botanist has been recruited by the Committee and lent to the Punjab Government. Mr. Trevor Trought (recently Senior Botanist for the Ministry of Agriculture, Egypt, Cotton Research Board) was appointed Cotton Research Botanist, Punjab, in August 1925.

Punjab Entomological Research Scheme.—Working under the Government Entomologist, Punjab, one of the Committee's Research Students, showed that the Pink Bollworm though at one time reported to be of negligible importance in the Punjab is now a major pest in the South-East Punjab and present in appreciable numbers, though only a minor pest at present, in the canal colonies. A grant has been made for an investigation of the factors which limit the spread of the insect under canal colony conditions and work

has been started this year, the Research Student referred to having been appointed Assistant Entomologist for the scheme. The investigation is complementary to the work at Cawnpore and its importance lies in the fact that should this insect become a major pest in the canal colonies (as it is in the United Provinces and South-East Punjab at present) the yield and value of the Punjab-American crop would be very seriously reduced.

Central Provinces and Berar.

The annual grants to the Central Provinces Department of Agriculture have provided for two Research Schemes, *viz.*:

(1) A Botanical investigation of the Central Provinces and Berar cottons with special reference to the improvement of the staple of the Oomra type.

(2) A study of cotton wilt in the Central Provinces and Berar. The Committee's grant has enabled the Economic Botanist to Government, Central Provinces, to be relieved of other work and to devote the whole of his time to cotton research of which he had previous considerable experience. The assistants required have been placed on deputation by the Local Government and are paid from the Committee's grant. The Local Government also placed at the disposal of the Economic Botanist for Cotton the Akola farm in Berar with an adequate annual grant for upkeep and cultivation expenses, a plant-breeding area, laboratory, etc., at Nagpur and certain facilities on other farms. A complete survey of the Oomras cotton is in hand and considerable progress towards the production of superior types has been made. The Oomras tract is the largest homogeneous cotton tract in India the general history of which has been the steady replacement of cottons of superior staple by inferior but hardier types and the reversal of this process will only be achieved as the result of thorough and patient experimental work.

(2) The cotton wilt investigation is being carried out by the Mycologist to Government, Central Provinces, and the Committee's grant provides for two assistants and for apparatus and contingencies. Preliminary results indicate that the course of this disease in the Central Provinces and Berar is distinctly different to that in the Karnatak and the problem has been attacked from the physiological aspect. The results so far are not conclusive.

BURMA.

A small non-recurring grant of Rs. 3,000 has been made for apparatus for the examination of the cotton fibre and an assistant from the Burma Agricultural Department is at present under training in the Committee's Technological Laboratory in the methods of fibre testing now in use there. The officers carrying out plant-breeding work on cotton in Burma are at a disadvantage owing to the great distance from Bombay and on the return of the assistant now under training part of the initial work on the fibre characters of Burmese cottons will be done locally.

GENERAL.

The progress made on the various Research Schemes is periodically reviewed by the Central Cotton Committee and it so happens this year that a number of important reports will come up for consideration somewhat later than usual. Hence the above summary is not up to date in all respects.

APPENDIX X.

List of Research Students.

Year of appointment	Name.	Where posted.	Branch of cotton research in which scholarship granted.	How now employed.	REMARKS.
[illegible]	[illegible], M.Sc. ..	Lyallpur.	Cotton Entomology.	Entomological Research Assistant.	
"	[illegible], B.Sc. ..	Punjab.	Cotton Botany (Plant Breeding).	Punjab Government scholar at Imperial College of Tropical Agriculture.	
"	[illegible] Pande, M.Sc. ..	Nagpur.	Do.	Senior Research Assistant, Central Provinces Botanical Scheme.	
"	[illegible], M.Sc.	Do.	Cotton Mycology.	Senior Mycological Assistant, Central Provinces Mycological Scheme.	
"	[illegible], M.Sc.	Coimbatore.	Cotton Botany.	Senior Research Student (Cotton Cytology), Indore Institute of Plant Industry.	
"	[illegible], B.Ag.	Dharwar.	Do.	Senior Research Student, Indore Institute of Plant Industry.	
[illegible]	[illegible], M.Sc. ..	Coimbatore.	Do.	(No record.)	
"	[illegible], M.Sc.	Technological Research Laboratory, Matunga, Bombay.	Textile Physics.	Junior Research Assistant, Technological Research Laboratory, Matunga, Bombay.	
"	[illegible]	Cawnpore.	Cotton Entomology.	Research Assistant, Pink Bollworm Scheme, United Provinces.	
	[illegible] ..	[illegible]	Cotton Physiology.	......	Resigned to go to Cambridge for further study.

APPENDIX X—*contd*

List of Research Students—*contd.*

Year of appointment	Name	Where posted	Branch of cotton research in which scholarship granted	How now employed	REMARKS
1923	Vishwa Ram Singh L.Ag	Cawnpore	Cotton Entomology	Research Student	
	Akbar Ali B Sc	Lyallpur	*Cotton Botany (Plant Breeding)*	Do	
	Kedar Nath Trehan M Sc.	Do	Cotton Entomology	Do	
Do	S F Kumana B A B Sc	Technological Laboratory Matunga Bombay	Cotton Technology	Do	
	J D Ranadive B Ag	Dharwar	*Cotton* Physiology	Do	
	P K Roy M Sc	Technological Laboratory Matunga Bombay	Textile Physics		Resigned
	K R Sen B Sc	Do	Do	Research Student	
	L S Rao M.Sc	Do	Cotton Microscopy	Lecturer in Botany Central College, Bangalore	
1924	D J Kapadia B A B Sc	Do	Cotton *Technology*	*Research* Student	
Do	Ram Saran Koshal M Sc	Do	Textile Physics	Do	
	M A Shama Iyengar B Ag.	Surat.	Cotton Physiology	Do	
	Karam Singh Lamba B Sc.	Lyallpur	Cotton *Entomology*	Do	
Do	Y D Wad M Sc	Coimbatore	Cotton Bio-chemistry	Do	
Do	H A. [illegible] B Ag.	Institute of Plant Industry Indore	Cotton Botany	Do	
Do	N C Talesara B.Ag	Do	Do	Do	

APPENDIX XI.

Progress in the Introduction of Improved Varieties of Cotton in Various Provinces.

BOMBAY—(1) *Gujerat.*—The policy of the Agricultural Department to establish 1027 A.L.F. cottons in the whole tract below the Narbada was continued during the year. The Rajpipla and the Baroda States took effective measures to distribute this seed in their territories. The Co-operative Cotton Sale Societies in the Olpad Taluka continued to grow seed which is somewhat inferior to 1027 A.L.F. but they were persuaded to try 1027 A.L.F. seed on a fairly large scale and some of them have taken more seed for further trial in the coming season. The Agricultural Department controlled 11,600 acres of private seed farms. The resulting seed from this area, amounting to 1,900,000 lbs., was distributed mostly in the tract below the river Narbada.

For the Broach tract (north of the Narbada up to Mahi river), a pure type of superior staple "B.D. 91" has been evolved on the Broach Farm. Seed of this type will be multiplied on the whole area of the farm this year and will be available for distribution in the Broach District next year.

For the Dholleras tract (North Gujerat beyond Mahi and the major portion of Kathiawar) four pure strains of Wagad cotton were tested under cultivators' conditions. Of these two strains have been rejected and the other two better strains, *viz.*, Pt. 4 and Pt. 8, are now being grown for multiplication on 150 to 200 acres during the current year.

(2) *Southern Division.*—The cultivation of selected types of Kumpta and Dharwar-American varieties of cotton, known respectively as selected Kumpta (Dharwar No. 1) and Upland (Gadag No. 1) is rapidly extending round Hubli and Gadag. The District staff of the Agricultural Department and the Cotton Sale Societies at Hubli and Gadag continued to work together for their extension. Each of these societies started during the year 19 seed depots and distributed seed through the depots and through seed societies. The area under these improved types of cotton amounted to 119,532 acres in the case of Dharwar No. 1 and 97,400 acres in the case of Gadag No. 1.

Extra profits realized by cultivators from the cultivation of these improved varieties during the year are estimated to be Rs. 8,57,000 and the demand for pure pedigree seed is increasing rapidly.

Distribution of Dharwar No. 1 cotton seed was extended during the year to a few villages in Athani, Chikkodi and Gokak talukas of the Belgaum District and a few villages of Indi, Bijapur, Bagalkot and Bagewadi talukas of the Bijapur District. The growth in all these villages was satisfactory and the demand for Dharwar No. 1 cotton seed is likely to increase in these two districts also. A new cross—Dharwar No. 1×Rosea strain No. 15—which gives a ginning percentage of 33 and has got a staple of 1", was multiplied on Gokak Farm and 1,500 lbs. seed have been reserved for distribution round Gokak and Bailhongal in Belgaum District, where experiments with this cotton have been very successful. This cross has all the good qualities of the parents.

(3) *Khandesh.*—The distribution of pure Roseum (N.R.) cotton seed continued on a larger scale. About 257,000 lbs. of this seed, sufficient to cover an area of about 18,000 acres, have been distributed by the Department through registered seed growers, seed unions and Taluka Development Associations. In addition, a large quantity of N.R. seed was distributed by cultivators from the balance of seed remaining with them.

Experimental work, directed to obtaining a type of cotton of superior staple and suitable to local conditions, has resulted in the isolation of two promising strains, BXX·27 and BXI 9·34. BXX. 27 was tried on a field scale on Jalgaon Farm and, as the results were encouraging, a further trial is being made with this strain on about 60 acres on cultivators' fields over the district. BXI 9·34 will be tried on a field scale for the first time during this year on Jalgaon Farm.

MADRAS—(1) *Tiruppur Cambodia Area.—(a) Cambodia.*—The work of improvement of Cambodia cotton began seven years ago. The Agricultural Department enters into yearly contracts with selected ryots by which the ryots receive cash advances of Rs. 15 per acre towards the cost of inter-cultivation operations, and in turn agree to sow the seed supplied by the Department on "seed farms" under departmental supervision. The kapas is ginned co-operatively and the seed is sold to the Department at a premium of Rs. 2

per *pothi* of 250 lbs. The lint is sold in public auction duly notified on behalf of the ryots concerned. The lint produced is of the best quality, as is testified by the high prices paid and by the eagerness with which auction sales are attended by the representatives of the Bombay and other millowners. At the auctions held during the past seven years, the departmental cotton has always fetched a price of at least Rs. 20 per candy over the prevailing market rate.

219,500 lbs. of seed were purchased from the seed farm ryots in 1925-26 and the major portion of this was distributed for sowing. About 7,000 acres were sown with this seed in 1925-26 of which 1,151 acres were sown under seed farm conditions. Besides these, the extent under natural conditions spread with this improved strain is estimated at 5,000 acres, making 12,000 acres in all. About four-fifths of this area is under strain 295 (Co. 1) and the remainder under strain No.15. 77,704 lbs. of seed of improved strains of Cambodia, sufficient to sow 7,500 acres, were distributed in the Trichinopoly District this year by the Department as well as by some of the ryots.

(*b*) *Karunganni.*—Karunganni cotton is steadily making head way in the dry lands of the districts of Coimbatore and Trichinopoly, displacing dry land Cambodia and Uppam. In Coimbatore, 4,150 acres were under Karunganni in 1925-26. Seed farms were organized for this variety also and 813 acres were under seed farms in the Coimbatore District. 1,250 lbs. of Karunganni seed, sufficient to sow 125 acres, were distributed in the Trichinopoly District.

(2) *Tinnevelly Area.—Company cotton or Karunganni.*—Pure seed (selected Co. type) is distributed by the Agricultural Department, the Seed Unions and by ryots who gin co-operatively and sell jointly. Nine seed unions were working during the year and sold 130,928 lbs. of seed. The total quantity of pure seed distributed by the above-noted agencies in the districts of Madura, Ramnad and Tinnevelly was 298,267 lbs., sufficient to sow an area of 29,826 acres of pure crop. The indigenous cotton crop in these districts is a mixture in which Karunganni has now become the predominant variety.

(3) *Northerns and Westerns Area.*—(*a*) *Northerns Tract.*—In the Northerns tract 12,700 acres were sown under "Nandyal 14"

cotton as against 20,180 of last year. This cotton is well suited for red and mixed soils. The yield was higher than last year owing to the favourable season. 380 bales of N.14 lint were sold by the Department at a premium of Rs. 40 per candy of 500 lbs. The remaining quantity was sold by the ryots themselves at a premium of about Rs. 35 to Rs. 40 per candy.

(*b*) *Westerns Tract.*—The selection Hagari 25 was grown on 179,363 acres. A greater area would have been sown if the season had commenced earlier. An average premium of Rs. 20-8-0 per bale of 400 lbs. was realized on lint sold by the Department, but the cotton sold by the ryots fetched only a premium of Rs. 4 to Rs. 11 per bale on account of the unsatisfactory finance of the cotton grower and consequent mixing and adulteration of his crop with inferior varieties of cotton.

Irrigated Cambodia.—As compared with 1922-23, the area under irrigated Cambodia in 1925-26 showed increases in all districts, from 100,273 to 100,366 in Coimbatore, from 13,462 to 42,360 in Salem and Trichinopoly, from 22,096 to 36,967 in Madura, from 21,201 to 29,269 in Ramnad and Tinnevelly and from 157,110 to 210,280 in the Presidency.

PUNJAB.—The area under Punjab-American cottons has continued to expand, being 1,065,700 acres in the year 1925-26. The increase is due to very large profits got in the previous years by the growers. The principal variety 4F (which was first given out in 1913) was grown on an a [illegible] The later selection 285F (given out in 1921) [illegible] e drought resistant and a higher yielder, but is not yet popular. It was grown on an area of only 12,000 acres. Similarly the still later selection 289F, which is just being given out, is a heavier cropper than either 4F or 285F and its lint is much better than 4F and rather better than 285F. It was grown on about 5,500 acres.

The tendency in the Punjab now is to grow American cottons even when the land is unsuitable and irrigation supplies inadequate.

Work for the improvement of indigenous cottons has been continued and the "Mollisoni" variety, which is an improved strain of indicum, is being grown on a larger scale than before. Similarly in the south-east of the province, where, on account of lack of irri-

gation facilities, American cotton cannot be grown, a variety of Desi Roseum cotton is becoming popular. The Agricultural Department alone supplied to the farmers seed of this variety sufficient for an area of 21,000 acres. This is in addition to seed kept by the farmers themselves for their own use.

United Provinces.—The progress in the introduction of improved varieties of cotton in these provinces has been satisfactory. A.19 continues to enjoy the popularity it has achieved by reason of its high yield and high ginning precentage. At least 30,000 acres were under this variety last year; the area was probably much greater since seed is being distributed by a large number of growers from whom no definite records are received. This variety will now spread rapidly over most of the great cotton-growing tract in the west of the province. In that tract cotton is sown partly on canal irrigation and partly when the rains break. A rapid-growing, quickly maturing cotton is required in each case; on the canal irrigated fields the cultivator expects to sow a rabi crop, in December after cotton is finished; late monsoons and early cold weathers frequently make the growing season in the unirrigated areas extremely short. A.19 ripens very quickly once the rains are over; it yields a large percentage of its crop in a short time. In addition it germinates readily and gives a good stand of plant in the hot, dry months of May and June, when moisture is difficult to conserve. These characteristics make it well suited to the western districts, which grow more than 50 per cent. of the total cotton of the province.

In the central circle the cultivation of J.N.1. is progressing; the area under this variety has increased from 2,000 acres in the previous year to about 3,000 acres this year.

The strains recently isolated in the Botanical Section of the Department are being tried under different environmental conditions. In parts of the Rohilkhand division certain types are appreciated on account of their high out-turns. One of the types known as C.402 yielded as much as 1,184 lbs. per acre, and in the spinning trials was found suitable for 22s.

There is no likelihood of an extension of the area under Cawnpore-American. This variety requires special irrigation facilities, and therefore cannot compete with other types under ordinary

conditions; it is now of little practical importance in the United Provinces.

BURMA.—Three new strains are now under trial on a field scale. The area under improved Wagale has increased to 5,000 acres and the area under Cambodia is now 6,000 acres. A deterioration in the quality of the latter crop has been reported by the ginning firms and the matter is receiving the attention of the Agricultural Department.

HYDERABAD STATE.—The policy of the Agricultural Department is to encourage the production of pure Bani (Hyderabad Gaorani) and to eliminate the short-stapled Khandesh variety (*Neglectum roseum*) by supplying large quantities of pure Gaorani seed to cultivators on Takavi. In the districts of Nanded, Osmanabad, Parbhani and Bir, it is estimated that at least 350,000 bales of pure Bani have been produced during this season.

BARODA STATE.—The State has for several years consistently followed the policy of co-operating with the Bombay Department of Agriculture in its attempts to improve the quality of the Surat cottons by introducing the 1027 A.L.F. variety. This policy was continued in such areas of the State as lie interlaced with those areas dealt with by the Bombay Department of Agriculture in the Surat and South-Surat areas. Attention has now been turned northwards and over 171,000 lbs. of improved cotton seed was distributed chiefly in Mangrol Taluka. It is intended to make special efforts to replace as much of the cotton area in Mangrol with improved cotton seed as possible.

RAJPIPLA STATE.—In co-operation with the Bombay Department of Agriculture the Rajpipla State had, by a special ordinance issued some years ago, made it illegal to sow Goghari or other short-stapled cottons in any part of the State. The 1027 A.L.F. improved variety of Surat cotton has now practically displaced the local short-stapled varieties with the result that the quality and reputation of the Rajpipla cotton have greatly improved and it is now recognized as equal to the best Surat and is much sought after.
